The Institute of Radio Engineers

INCORPORATED

YEARBOOK 1946

John O Ashton Senior Member
No. 211 - 1912
Columbia University

A DIRECTORY OF RADIO ENGINEERS

AND A LISTING OF ENGINEERING PRODUCTS

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THE INSTITUTE OF RADIO ENGINEERS

YEARBOOK 1946

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In the near future The Institute of Radio Engineers expects to move its headquarters office from its present address, ~~330 West 42nd Street, New York, 18, N. Y.~~, to its new building at 1 East 79th Street, New York 21, N. Y. Readers are urged to watch the PROCEEDINGS OF THE I.R.E. and Waves and Electrons for announcement of such change.

The
Institute of Radio Engineers
YEARBOOK
1946

A DIRECTORY
OF RADIO ENGINEERS
AND A LISTING OF
ENGINEERING PRODUCTS

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~~Armstrong, E.~~ H.	1916–19; 1921; 1936–38			
*Austin, L. W.	1914–17	1914		
Bailey, Austin	1940–42			
Bailey, S. L.	1943–46			
Baker, W. R. G.	1940; 1946			
*Ballantine, Stuart	1935–37	1935		
Barkhausen, Heinrich	1935		1935	
Barrow, W. L.	1943–45		1935	
Barton, F. S.	1945		1945	
Batcheller, Arthur	1928–32; 1934–36			
Batsel, M. C.	1933			
Bennett, E. M.	1923–25			
Beverage, H. H.	1936–39	1937		
Bown, Ralph	1926–29; 1937–39	1927	1926	
Brown, J. E.	1938			
*Bullard, W. H. G.	1916–1921			
Cady, W. G.	1928–29; 1932–34	1932		Editor, 1929
Caldwell, O. H.	1932–35			
Carter, E. F.	1943–45			
Chaffee, E. L.	1922		1922	
Chamberlain, A. B.	1941–44			
Chambers, C. C.	1942			
Clayton, J. M.	1928–29			Secretary, 1928–29
Clement, L. M.	1945			
Coggeshall, I. S.	1941–44			
Colpitts, E. H.	1921–23			
*~~Conrad, Frank~~	1927			
Cosentino, A. T.	1941		1941	
Craven, T. A. M.	1937			
Cunningham, F. W.	1938–40			
Cutting, R. F.	1921–24	1922	1921	
*~~Davis, G. S.~~	1915; 1917–19			
de Forest, Lee	1930–32	1930		
Dellinger, J. H.	1924–31	1925	1924	
Deloraine, E. M.	1946		1946	
Eastham, Melville	1922–41			Treasurer, 1927–40
Eckersley, P. P.	1937		1937	
Edwards, C. P.	1931		1931	
Espenschied, Lloyd	1912–13; 1915–26; 1931			
Everitt, W. L.	1942–46	1945		
Fisk, E. T.	1938		1938	
Friis, H. T.	1941–43			
Fuller, L. F.	1928			

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Gustafson, G. E.	1943			
Guy, R. F.	1944–46			
Hackbusch, R. A.	1938; 1944–46		1944	
Hammond, J. H., Jr.	1912; 1914			Treasurer, 1913–14
Hanson, O. B.	1938–43			
Hazeltine, Alan	1923–27; 1936–39	1936		
Heising, R. A.	1927–30; 1933–35; 1939–41; 1943–45	1939		Treasurer, 1943–45
Henney, Keith	1945–46			
*~~Hill, Guy~~	1914–16; 1918–20			
Hogan, J. V. L.	1912–36	1920	1916–19	
~~Horle, L. C. F.~~	1934; 1936–42; 1944–46	1940		
Horn, C. W.	1933–34			
Houck, H. W.	1931–32			
*~~Hubley, Warren~~	1915–16; 1918–27			Treasurer, 1915–16; 1918–27
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Jett, E. K.	1938			
Jansky, C. M., Jr.	1929–42	1934		
Johnson, J. K.	1942			
Jolliffe, C. B.	1936–37; 1944			
Kaar, I. J.	1939			
*~~Kennelly, A. E.~~	1916–18	1916		
~~Kolster, F. A.~~	1933–35			
Krumm, L. R.	1917; 1921			Treasurer, 1917
Lack, F. R.	1940; 1946			
Langmuir, Irving	1923–25	1923		
Lee, A. G.	1930		1930	
Lewis, G. H.	1918–19; 1926; 1935			
Llewellyn, F. B.	1939–46	1946		
Manson, R. H.	1927–33	1931		
Marriott, R. H.	1912–16; 1920–22; 1926–32	1912	1913	
McNicol, Donald	1919–28	1926	1925	
Meissner, Alexander	1929		1929	
*~~Morecroft, J. H.~~	1922–26	1924	1923	
Murray, A. F.	1936–39			
Nelson, E. L.	1932–36			
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Poulsen, Valdemar	1936		1936	
Pratt, Haraden	1935–46	1938		Treasurer, 1941–42 Secretary, 1943–46
*~~Pupin, M. I.~~	1917	1917		
Reich, H. J.	1945			
Reoch, A. E.	1925–27			
Royden, G. T.	1946			
Rush, W. A.	1942		1942	
Sarnoff, David	1915–20			Secretary, 1915–17
Shackelford, B. E.	1945–46			
Shute, E. R.	1933–34			
Simon, E. J.	1912–15			Secretary, 1913–14
Sinclair, D. B.	1945–46			
*~~Squier, G. O.~~	1918–22			
*~~Stone, J. S.~~	1912; 1914–19	1915	1914	
Swinyard, W. O.	1945–46			
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*~~Thompson, B. J.~~	1937–44			
Turner, H. M.	1933–46	1944		
van der Bijl, H. J.	1945		1945	
van der Pol, Balth.	1934		1934	
Van Dyck, A. F.	1930–35; 1939–44	1942		
Webb, W. L.	1946			
Webster, E. M.	1946			
*~~Weagant, R. A.~~	1912; 1914–17			
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(S. L. Bailey, Alternate)
E. K. Jett
T. R. Kennedy, Jr.
J. R. Poppele
A. F. Van Dyck
E. M. Webster
L. P. Wheeler

SECTIONS

R. A. Heising, *Chairman*

S. L. Bailey
E. D. Cook
Virgil M. Graham
R. V. L. Hartley
F. A. Polkinghorn
G. T. Royden
B. E. Shackelford
W. O. Swinyard
H. P. Westman
(Section Chairmen *Ex-Officio*)

TELLERS

G. B. Hoadley, *Chairman*
Edward J. Content, *Vice-Chairman*
Trevor Clark

TECHNICAL COMMITTEES

May 1, 1945–May 1, 1946

ANNUAL REVIEW

L. E. Whittemore, *Chairman*

R. S. Burnap
W. G. Cady
P. S. Carter
C. C. Chambers
I. S. Coggeshall
W. T. Cooke
D. E. Foster
E. A. Guillemin
R. F. Guy
Keith Henney
I. J. Kaar
A. C. Keller
J. F. Morrison
E. W. Schafer
J. A. Stratton
H. A. Wheeler
C. J. Young
P. D. Zottu

ANTENNAS

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G. H. Brown
Harry Diamond
W. S. Duttera
Sidney Frankel
R. F. Guy
W. E. Jackson
E. C. Jordan
R. W. P. King
W. B. Lodge
J. F. Morrison
D. C. Ports
S. A. Schelkunoff
J. C. Schelleng
D. B. Sinclair
George Sinclair
Norman Snyder
L. C. Van Atta

CIRCUITS

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Cledo Brunnetti
C. R. Burrows
F. C. Everett
W. L. Everitt
L. A. Kelley
J. M. Miller
C. A. Nietzert
A. F. Pomeroy
J. B. Russell, Jr.
S. W. Seeley
W. N. Tuttle
H. A. Wheeler

ELECTROACOUSTICS

A. C. Keller, *Chairman*

B. B. Bauer
S. J. Begun
R. P. Glover
F. V. Hunt
V. N. James
R. A. Miller
G. M. Nixon
Benjamin Olney
H. F. Olson
H. H. Scott

ELECTRON TUBES

R. S. Burnap, *Chairman*

E. L. Chaffee
K. C. De Walt
W. G. Dow
R. L. Freeman
A. M. Glover
T. T. Goldsmith, Jr.
J. W. Greer
L. B. Headrick
E. C. Homer
D. R. Hull
F. B. Ingram
D. E. Marshall
J. A. Morton
I. E. Mouromtseff
L. S. Nergaard
G. D. O'Neill
H. J. Reich
A. C. Rockwood
A. L. Samuel
J. R. Steen

FACSIMILE

C. J. Young, *Chairman*

J. C. Barnes
F. R. Brick, Jr.
Henry Burkhard
J. J. Callahan
A. G. Cooley
R. C. Curtiss
C. N. Gillespie
J. V. L. Hogan
L. D. Prehn
Hugh Ressler
Arthur Rustad
L. G. Stewart
W. E. Stewart
E. F. Watson
R. J. Wise

FREQUENCY MODULATION

C. C. Chambers, *Chairman*

J. E. Brown
M. G. Crosby
C. W. Finnigan
W. F. Goetter
A. C. Goodnow
R. F. Guy
D. L. Jaffe
M. H. Jennings
V. D. Landon
H. B. Marvin
D. B. Smith
J. E. Young

HANDBOOK

H. A. Wheeler, *Chairman*

C. T. Burke
R. S. Burnap
J. D. Crawford
W. H. Crew
R. L. Dietzold
D. G. Fink
Sidney Frankel
Knox McIlwain
Frank Massa
R. D. Rettenmeyer
J. C. Schelleng
F. E. Terman
B. F. Wheeler
J. R. Whinnery
R. M. Wilmotte

INDUSTRIAL ELECTRONICS

P. D. Zottu, *Chairman*
(Appointments Later)

MEDICAL ELECTRONICS

(Appointments Later)

PIEZOELECTRIC CRYSTALS

W. G. Cady, *Chairman*

C. F. Baldwin
W. L. Bond
J. K. Clapp
Clifford Frondel
E. W. Johnson
W. P. Mason
Paul Smith
R. A. Sykes
K. S. Van Dyke
J. M. Wolfskill

RADIO RECEIVERS

D. E. Foster, *Chairman*

G. L. Beers
J. E. Brown
W. F. Cotter
L. F. Curtis
W. L. Dunn
H. C. Forbes
C. J. Franks
J. K. Johnson
C. R. Miner
Garrard Mountjoy
H. O. Peterson
J. M. Pettit
H. P. Westman
R. M. Wilmotte

RADIO TRANSMITTERS

J. F. Morrison, *Chairman*

M. R. Briggs
H. R. Butler
Harry Diamond
F. A. Gunther
W. E. Jackson
W. B. Lodge
J. C. Schelleng
Robert Serrell
D. B. Sinclair
I. R. Weir
J. E. Young

RADIO WAVE PROPAGATION AND UTILIZATION

J. A. Stratton, *Chairman*

S. L. Bailey
C. R. Burrows
T. J. Carroll
Earl Cullum
D. E. Kerr
H. O. Peterson
J. A. Pierce
S. A. Schelkunoff
R. L. Smith-Rose
H. W. Wells

RAILROAD AND VEHICULAR COMMUNICATION

W. T. Cooke, *Chairman*

A. E. Abel
T. G. M. Brown
F. C. Collings
C. N. Kimball, Jr.
D. E. Noble
G. H. Phelps
F. M. Ryan
Winfield Salisbury

RESEARCH

F. E. Terman, *Chairman*
(Appointments Later)

STANDARDS

R. F. Guy, *Chairman*

R. S. Burnap
W. G. Cady
P. S. Carter
C. C. Chambers
I. S. Coggeshall
W. T. Cooke
D. E. Foster
Virgil M. Graham
E. A. Guillemin
Keith Henney
L. C. F. Horle
I. J. Kaar
A. C. Keller
J. F. Morrison
Knox McIlwain
E. W. Schafer
H. L. Spencer
J. A. Stratton
H. M. Turner
H. A. Wheeler
L. E. Whittemore
C. J. Young
P. D. Zottu

SYMBOLS

E. W. Schafer, *Chairman*

R. R. Batcher
M. R. Briggs
R. S. Burnap
C. R. Burrows
H. F. Dart
J. H. Dellinger
E. T. Dickey
H. S. Knowles
O. T. Laube
A. F. Pomeroy

TELEVISION

I. J. Kaar, *Chairman*

W. F. Bailey
J. E. Brown
K. A. Chittick
D. E. Foster
P. C. Goldmark
T. T. Goldsmith, Jr.
R. N. Harmon
D. L. Jaffe
A. G. Jensen
P. J. Larsen
L. M. Leeds
H. M. Lewis
S. Maulner
Jerry Minter
Garrard Mountjoy
D. W. Pugsley
R. E. Shelby
D. B. Sinclair
D. B. Smith
M. E. Strieby

INSTITUTE REPRESENTATIVES IN COLLEGES
1946

Alabama Polytechnic Institute: Appointment Later
Alberta, University of: J. W. Porteous
Arkansas, University of: Appointment Later

British Columbia, University of: H. J. MacLeod
Brooklyn, Polytechnical Institute of: G. B. Hoadley

California Institute of Technology: S. S. Mackeown
California, University of: L. J. Black
Carleton College: Appointment Later
Carnegie Institute of Technology: E. M. Williams
Case School of Applied Science: P. L. Hoover
Cincinnati, University of: W. C. Osterbrock
Colorado, University of: Appointment Later
Columbia University: J. R. Ragazzini
Connecticut, University of: F. P. Fischer
Cooper Union: J. B. Sherman
Cornell University: True McLean

Detroit, University of: Appointment Later
Drexel Institute of Technology: Appointment Later
Duke University: W. J. Seeley

Florida, University of; P. H. Craig

Georgia School of Technology: M. A. Honnell

Harvard University: E. L. Chaffee

Idaho, University of: H. E. Hattrup
Illinois Institute of Technology: C. S. Roys
Illinois, University of: Appointment Later
Iowa, State University of: L. A. Ware

Johns Hopkins University: Ferdinand Hamburger, Jr.

Kansas State College: Karl Martin
Kansas, University of: G. A. Richardson

Lawrence Institute of Technology: H. L. Byerlay
Lehigh University: D. E. Mode
Louisiana State University: W. E. Owen

Maine, University of: W. J. Creamer, Jr.
Manhattan College: E. N. Lurch
Maryland, University of: G. L. Davies
Massachusetts Institute of Technology: E. A. Guillemin and W. H. Radford
McGill University: F. S. Howes
Michigan, University of: L. N. Holland
Minnesota, University of: O. A. Becklund

Nebraska, University of: F. W. Norris
Newark College of Engineering: Solomon Fishman
New Mexico, University of: W. F. Hardgrave
New York, College of the City of: Harold Wolf
New York University: Philip Greenstein
North Carolina State College: W. S. Carley
North Dakota, University of: C. W. Rook
Northeastern University: G. E. Pihl
Northwestern University: R. E. Beam
Notre Dame, University of: H. E. Ellithorn

Ohio State University: E. M. Boone
Oklahoma Agriculture and Mechanical College: H. T. Fristoe
Oregon State College: A. L. Albert

Pennsylvania State College: G. L. Crossley
Pennsylvania, University of: C. C. Chambers
Pittsburgh, University of: L. E. Williams
Princeton University: J. G. Barry
Purdue University: R. P. Siskind

Queen's University: H. H. Stewart

Rensselaer Polytechnic Institute: H. D. Harris
Rice Institute: M. V. McEnany
Rose Polytechnic Institute: Appointment Later
Rutgers University: J. L. Potter

Southern Methodist University: H. J. Smith
Stanford University: Karl Spangenberg
Stevens Institute of Technology: F. C. Stockwell

Texas, University of: E. W. Hamlin
Toronto, University of: R. G. Anthes
Tufts College: A. H. Howell

Union College: F. W. Grover
United States Military Academy: P. M. Honnell
United States Naval Academy: G. R. Giet
Utah, University of: O. C. Haycock

Virginia, University of: L. R. Quarles
Virginia Polytechnic Institute: R. R. Wright

Washington, University of: A. V. Eastman
Washington University: Stanley Van Wambeck
Wayne University: G. W. Carter
Western Ontario, University of: G. A. Woonton
West Virginia University: R. C. Colwell
Wisconsin, University of: Glenn Koehler
Worcester Polytechnic Institute: H. H. Newell

Yale University: H. M. Turner

INSTITUTE REPRESENTATIVES ON OTHER BODIES, 1946

American Documentation Institute: J. H. Dellinger

Council of the American Association for the Advancement of Science: J. C. Jensen

Joint Co-ordination Committee on Radio Reception of the E.E.I., N.E.M.A., and R.M.A.: C. E. Brigham

National Research Council, Division of Engineering and Research: F. E. Terman

Radio Technical Planning Board: D. B. Sinclair (Alfred N. Goldsmith, alternate)

U. R. S. I. (International Scientific Radio Union) Executive Committee: C. M. Jansky, Jr.

U. S. National Committee, Advisers on Electrical Measuring Instruments: Melville Eastham and H. L. Olesen

U. S. National Committee, Advisers on Symbols: L. E. Whittemore and J. W. Horton

U. S. National Committee of the International Electrotechnical Commission: H. M. Turner

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AMERICAN STANDARDS ASSOCIATION

Board of Directors: F. R. Lack

Electrical Standards Committee: H. M. Turner (H. P. Westman, alternate)

Sectional Committee on Acoustical Measurements and Terminology: E. D. Cook and H. F. Olson

Sectional Committee on Definitions of Electrical Terms: Haraden Pratt

Subcommittee on Vacuum Tubes: B. E. Shackelford

Sectional Committee on Electric and Magnetic Magnitudes Units: J. H. Dellinger

Sectional Committee on Electrical Installations on Shipboard: I. F. Byrnes

Sectional Committee on Electrical Measuring Instruments: Wilson Aull, Jr.

Sectional Committee on Graphical Symbols and Abbreviations for Use on Drawings: Austin Bailey (H. P. Westman, alternate)

Subcommittee on Communication Symbols: H. M. Turner

Sectional Committee on Specifications for Dry Cells and Batteries: H. M. Turner

Sectional Committee on Standards for Drawings and Drafting Room Practices: Austin Bailey (H. P. Westman, alternate)

Committee on Vacuum Tubes for Industrial Purposes: B. E. Shackelford

War Committee on Radio: Alfred N. Goldsmith*

War Standards Committee on Methods of Measuring Radio Noise: C. J. Franks and Garrard Mountjoy

Standards Council: Alfred N. Goldsmith (R. F. Guy, alternate)

Sectional Committee on Letter Symbols and Abbreviations for Science and Engineering: H. M. Turner

Subcommittee on Letter Symbols for Radio Use: H. M. Turner

Sectional Committee on National Electrical Safety Code, Subcommittee on Article 810, Radio Broadcast Reception Equipment: E. T. Dickey (Virgil M. Graham, alternate)

Sectional Committee on Preferred Numbers: A. F. Van Dyck

Sectional Committee on Radio: Alfred N. Goldsmith, chairman; Haraden Pratt, and L. E. Whittemore

Sectional Committee on Radio-Electrical Co-ordination: J. V. L. Hogan, C. M. Jansky, Jr., and L. E. Whittemore

* Also chairman of its Subcommittee on Insulating Material Specifications for the Military Services.

THE INSTITUTE

GENERAL

Thousands of persons are today engaged in furthering, through research and engineering, the art of radio and the many fields ancillary thereto. And yet of the important technical developments of mankind, few have as good a case as does radio in attributing its origin to a single individual. It is true that Clerk Maxwell, in the middle of the nineteenth century, drew upon the experiences of Faraday and Oersted; but the conception of electromagnetic waves was distinctly new and was due solely to that first director of the now celebrated Cavendish Laboratory. It remained for Heinrich Hertz, in his laboratory at Karlsruhe, to demonstrate experimentally for the first time the transmission and reception of electromagnetic waves generated by an oscillating circuit.

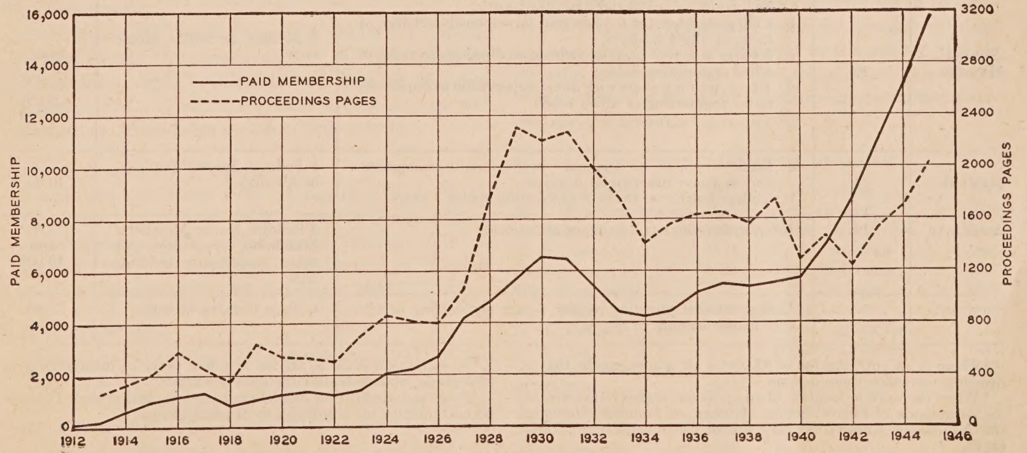
Alert to the significance of this phenomenon, Marconi, Poulsen, Alexanderson, Fessenden and other engineers at home and abroad developed equipment by which messages in code could be transmitted without wires and over long distances. With the advent of the vacuum tube in the early years of the first World War, wireless telegraphy gave way to wireless telephony and later, to radio broadcasting. Radio in all its ramifications as known to us today stands as a superb tribute to the combined developmental genius of many thousands of engineers skilled in electricity, acoustics, and electronics.

In May, 1912, which was about midway in the period between the Hertz experiments and the present, a small group of far-seeing engineers recognized in wireless of that day an infant industry which, through scientific research and engineering development, could be brought to magnificent fruition for the benefit of mankind. Here, as never before, was a means of communication which knew no national boundaries. The growth and success of radio development were clearly seen, at that time, to rest not alone upon international co-operation, but also upon collaboration in allied fields of science and engineering. It was against this background that Alfred N. Goldsmith, J. V. L. Hogan, and R. H. Marriott founded, through the merger of two small professional societies, The Institute of Radio Engineers.

Starting with fewer than fifty members in 1912, the Institute today (January, 1946) embraces some 16,000 members from every corner of the globe. The nature of this growth, to the end of 1944, is shown by the full line in the accompanying graph. Let us now turn to the Institute of the present and consider its organization and management, its publications, and its aspirations.

The Institute of Radio Engineers is an incorporated, nonprofit organization having as its object the advancement of the theory and practice of radio and electronics including allied branches of engineering and all related arts and sciences. To this end, the Institute prepares technical papers, reports, and general information of interest to radio engineers. It holds meetings and discussions in numerous localities throughout the United States and Canada. It maintains committees engaged in collating and standardizing the results of technical research and development. Typical among the fields covered in these activities are radio communication, sound broadcasting, television, marine and aerial guidance, tubes, radio-frequency measurements, engineering education, electron optics, sound and picture electrical recording and reproduction, power and manufacturing applications of radio-and-electronic technique, industrial electronic control and processes, and medical electrical research and applications.

Membership in the Institute is distributed among



various grades representative of experience and achievement in radio engineering and allied fields. The grade of Fellow is one of distinction, and appointment thereto by the Board of Directors is made on the basis of eminence and distinguished service. Other grades—Senior Member, Member, Associate, and Student—are filled from applicants whose age, experience, and attainments conform to the respective requirements set forth in the Constitution.

In the interest of promoting the arts and techniques incident to radio development, the Institute has established some 19 technical committees covering fields of current activity in radio engineering and composed of persons of demonstrated ability in their respective fields. Through the Institute, these committees publish brochures on standards. In general the object of these publications is to set forth, partly in collaboration with technical committees of other engineering societies, accepted definitions of terms, and methods of measurements of physical quantities used in radio engineering practices.

To afford opportunity for personal contact and oral discussions, the Institute holds, at least once a year, a technical meeting for its entire membership. At this annual meeting, it is customary to invite manufacturers to exhibit equipment of recent design and interest to radio engineers. It is believed that by this means mutual benefit accrues to both engineer and manufacturer through first-hand acquaintance with the activities of one another. To facilitate interim meetings, Sections have been established throughout the United States, Canada, and Argentina, functioning under the egis of the Institute. Section meetings afford opportunity for members to make acquaintances locally and to present and discuss matters of common interest with fellow members.

The management of The Institute of Radio Engineers resides in a Board of Directors, selected from the body of Fellows and Senior Members, acting through an Executive Committee and the officers of the Institute. The President and Vice-President are elected annually from the body of Fellows and Senior Members of the Institute.

PUBLICATIONS OF THE INSTITUTE

Perhaps the most important single activity of the Institute is the publication of a technical journal. In 1913, the year following the founding of the Institute, appeared the first issue of the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS. Established first as a quarterly and later a bimonthly, the PROCEEDINGS for the last nineteen years has been published in twelve numbers annually. In 1939, the name of this technical organ of the Institute was shortened to PROCEEDINGS OF THE I. R. E., and the format was changed to the style now in use. Beginning with the issue for January, 1946, the journal bears the name PROCEEDINGS OF THE I.R.E. AND WAVES AND ELECTRONS.

The PROCEEDINGS OF THE I.R.E. AND WAVES AND ELECTRONS is the official publication of The Institute of Radio Engineers, and in it are published technical

MEMBERSHIP REQUIREMENTS AND DUES

GRADE	MINIMUM AGE	EXPERIENCE	REFERENCES	ANNUAL DUES[1]
FELLOW	—	By award only. No applications accepted.	—	$10.00
SENIOR MEMBER	26	a. Radio engineer or scientist—6 years of active practice and important technical radio or allied work. b. College teacher for 6 years and in responsible charge of radio or allied subjects. c. 6 years of active practice, with contributions to radio or allied engineering fields. d. Executive for 6 years with direct supervision of important radio engineering or allied work.	5 Fellows or Senior Members[2]	10.00 3 13
MEMBER	24	a. Radio engineer or scientist—professionally competent and in active practice for 3 years. b. College teacher of radio or allied subjects for 3 years.	4 Fellows, Senior Members, or Members[2]	10.00
ASSOCIATE	18	Interest in radio engineering or allied field.	3 Fellows, Senior Members, Members, Associates, or other responsible individuals	7.00 and 10.00[3]
STUDENT[4]	—	College student pursuing regular 4-year engineering or science course leading to degree.	College Faculty Member	3.00

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[1] There is an entrance fee of $3.00 for all grades except that of Student, for which there is none.

[2] When the work or location of an applicant makes impracticable the submission of Fellow, Senior Member, or Member references, the Admissions Committee may accept other satisfactory references.

[3] Associate dues are $7.00 for first five years of membership in that grade, and thereafter the dues are $10.00.

[4] A special application blank is required for this grade. There is no entrance fee for admission to Student grade.

papers, discussions, and communications which have been submitted to it and approved by the Board of Editors and Papers Committee of the Institute. Over 2500 papers have been published in the Proceedings. Of late years an increasing volume of nontechnical material in its pages has also proved of interest to the membership. The Proceedings of the I.R.E. and Waves and Electrons is mailed without charge to all members of the Institute; the subscription price to nonmembers being $10.00 per year; and $11.00 if sent to foreign destinations.

With the January, 1946, issue of the Proceedings of the I.R.E. and Waves and Electrons, the magazine is presented in two parts. The Proceedings portion contains papers dealing with advanced research topics, the more-advanced types of equipment and methods of development; mathematico-physical analyses of engineering problems; relatively advanced or abstract studies of scientific or technical matters, and the like. The Waves and Electrons section contains papers dealing with current engineering developments of equipment and methods; tutorial papers covering specific aspects of radio and electronic engineering; historical papers; information concerning the activities of the members of the Institute; Sections' news; book reviews; and other similar material. It should be emphasized that the technical standards and levels of paper acceptance are identical for both parts of the dual publication.

Standardization reports have been issued since 1913. The early reports were confined to the definition of technical terms and presentation of standard graphical symbols. The more recent reports have gone considerably beyond this scope and include methods of testing certain items of equipment and measuring quantities associated with the radio art. Letter symbols and mathematical notation are proposed. The following I.R.E. Standards reports are available:

Electronics:

Definitions of Terms, Symbols, 1938. A reprint (1943) of the like-named section of "Standards on Electronics, 1938." Methods of Testing Vacuum Tubes, 1938. A reprint (1943) of the like-named section of "Standards on Electronics, 1938."

Transmitters and Antennas:

Definitions of Terms, 1938. A reprint (1942) of the like-named section of "Standards on Transmitters and Antennas, 1938." Methods of Testing, 1938. A reprint (1942) of the like-named section of "Standards on Transmitters and Antennas, 1938."

Radio Receivers:

Definitions of Terms, 1938. A reprint (1942) of the like-named section of "Standards on Radio Receivers, 1938." Methods of Testing Broadcast Radio Receivers, 1938. A reprint (1942) of the like-named section of "Standards on Radio Receivers, 1938."

Radio Wave Propagation:

Definitions of Terms, 1942.
Measuring Methods, 1942. Methods of Measuring Radio Field Intensity, Measuring Power Radiated from an Antenna, Measuring Noise Field Intensity.
Definitions of Terms Relating to Guided Waves, 1945.

Facsimile:

Definitions of Terms, 1942.
Temporary Test Standards, 1943.

Piezoelectric Crystals:

Recommended Terminology, 1945.

The Institute of Radio Engineers sponsored the publication of four standards of the American Standards Association as follows:

American Standards:

Standard Vacuum-Tube Base and Socket Dimensions. (ASA C16.2–1939.)
Manufacturing Standards Applying to Broadcast Receivers. (ASA C16.3–1939.)
Loudspeaker Testing. (ASA C16.4–1942.)
Volume Measurements of Electrical Speech and Program Waves. (ASA C16.5–1942.)

Yearbooks have been issued at various intervals. The first was published in 1914, and the second in 1916. The next seven were published annually between 1926 and 1932. The present 1946 Yearbook represents the twelfth to be published by the Institute, and is the first to appear since 1942.

AWARDS

The Institute annually bestows two awards in recognition of outstanding achievements in the theory, practice, or applications in the field of radio communication.

Medal of Honor

The Institute Medal of Honor is awarded in recognition of distinguished service rendered through substantial and important advancement in the science and art of radio communication. The recipient of this Medal is named by the Board of Directors upon recommendation by the Awards Committee.

RECIPIENTS OF MEDAL OF HONOR

E. H. Armstrong	1917
E. F. W. Alexanderson	1919
G. Marconi	1920
R. A. Fessenden	1921
Lee de Forest	1922
John Stone Stone	1923
M. I. Pupin	1924
G. W. Pickard	1926
L. W. Austin	1927
Jonathan Zenneck	1928
G. W. Pierce	1929
P. O. Pedersen	1930
G. A. Ferrié	1931
A. E. Kennelly	1932
J. A. Fleming	1933
S. C. Hooper	1934
Balth. van der Pol	1935
G. A. Campbell	1936
Melville Eastham	1937
J. H. Dellinger	1938
A. G. Lee	1939
Lloyd Espenschied	1940
Alfred N. Goldsmith	1941
A. H. Taylor	1942
William Wilson	1943
Haraden Pratt	1944
H. H. Beverage	1945
R. V. L. Hartley	1946

MORRIS LIEBMANN MEMORIAL PRIZE

The Morris Liebmann Memorial Prize carries a monetary award of varying amount, derived from the income of a $10,000 endowment fund. The fund was donated by E. J. Simon, "a friend and member of the Institute," to preserve the memory of Colonel Morris N. Liebmann who gave his life in the cause of the United States in the first World War. This prize is given annually to a member of the Institute who, in the opinion of a special committee, shall have made an important contribution to the radio art.

RECIPIENTS OF MORRIS LIEBMANN MEMORIAL PRIZE

L. F. Fuller	1919
R. A. Weagant	1920
R. A. Heising	1921
C. S. Franklin	1922
H. H. Beverage	1923
J. R. Carson	1924
Frank Conrad	1925
Ralph Bown	1926
A. H. Taylor	1927
W. G. Cady	1928
E. V. Appleton	1929
A. W. Hull	1930
Stuart Ballantine	1931
Edmond Bruce	1932
Heinrich Barkhausen	1933
V. K. Zworykin	1934
F. B. Llewellyn	1935
B. J. Thompson	1936
W. H. Doherty	1937
G. C. Southworth	1938
H. T. Friis	1939
H. A. Wheeler	1940
P. T. Farnsworth	1941
S. A. Schelkunoff	1942
W. L. Barrow	1943
W. W. Hansen	1944
Peter C. Goldmark	1945

BUILDING FUND

The use of electronics was so widespread and important during the recent war that directors of the Institute were convinced that The Institute of Radio Engineers was destined to become one of the great engineering societies of the world. Pressed by the need for adequate headquarters space, a Building-Fund campaign was launched to raise a minimum of $500,000 for the purpose of providing the Institute with a permanent home, expanding the facilities of the Institute, and, in the process, of creating a closer union between radio engineers and their industry.

The response was conclusive both in magnitude and in its mode of accomplishment. The members of the I.R.E. and executives high in industry rallied with enthusiasm and vigor. Notable showings were made in every grade of membership, from Fellow to Student, and substantial contributions from a great number of organizations, both large and small, in the radio-and-electronic field, built up an impressive total which, at the date of this writing, stands at $623,000. The achievement made it clear that the industry is appreciative of its indebtedness to the engineers, and that the engineers fully recognize the opportunities of advancement which their industry presents to them.

An Office-Quarters Committee has purchased a building, under authorization from the Board of Directors, from part of the fund thus raised. The fund itself is under the control of three Administrators, who have authorized withdrawals for the purchase, improvement, and furnishing of this building in New York City located on Seventy-ninth Street at Fifth Avenue. The remainder of the fund will be left at interest to help defray the running expenses of the building or perhaps, ultimately, to permit joining with other engineering societies or scientific organizations in co-operative ownership of another property.

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THE INSTITUTE OF RADIO ENGINEERS

(Incorporated, August 23, 1913)

CONSTITUTION

Adopted at the First Meeting of The Institute of Radio Engineers, May 13, 1912.
Amended, November 2, 1914; December 5, 1915; October 7, 1931; March 1, 1939;
November 5, 1941; October 8, 1943; November 29, 1944; September 23, 1945;
and December 15, 1945

ARTICLE I

NAME AND OBJECT

Sec. 1—The name of this organization shall be The Institute of Radio Engineers, Incorporated.

Sec. 2—Its objects shall be scientific, literary, and educational. Its aims shall include the advancement of the theory and practice of radio, and allied branches of engineering and of the related arts and sciences, their application to human needs, and the maintenance of a high professional standing among its members. Among the means to this end shall be the holding of meetings for the reading and discussion of professional papers and the publication of papers, discussions, communications, and such other matters as may be appropriate for the fulfillment of its objects.

ARTICLE II

MEMBERSHIP

Sec. 1—The membership of the Institute shall consist of:

a. Fellows, who shall be entitled to all rights and privileges of the Institute.

b. Senior Members, who shall be entitled to all rights and privileges of the Institute.

c. Members, who shall be entitled to all rights and privileges of the Institute except the right to hold the offices of President, Vice President, and Director.

d. Associates, who shall be entitled to all rights and privileges of the Institute except the right to hold the offices of President, Vice President, and Director, and the chairmanships of standing Committees and of Sections, and the right to vote. However, Associates of record on March 1, 1939, shall have the right to vote so long as a continuous membership since that date is maintained.

e. Students, who may participate in meetings, wear the badge of the Institute, and receive publications designated by the Board of Directors, but who shall have no other rights and privileges.

Sec. 2—Fellow: For admission or transfer to the grade of Fellow, a candidate shall be at least thirty-two years of age and shall be:

a. An engineer or scientist in radio or allied fields. As such he shall have attained distinction in his profession and shall be eminently qualified to take responsible charge of important radio or allied work. He shall have been in the active practice of his profession for at least ten years, and shall have had responsible charge of important radio or allied work for at least three years, or

b. A professor of engineering or of physical science. As such he shall have attained special distinction as an expounder of the principles of engineering or of science in radio or allied fields. He shall have had at least ten years' experience as a teacher of electrical or physical subjects and shall have had responsible charge, for at least three years, of a course in radio or allied subjects in a school of recognized standing, or

c. A person who has done notable original work contributing to the advancement of engineering or science in radio or allied fields, which has given him a recognized standing at least equivalent to that required for Fellow under paragraph "*a*" or "*b*," or

d. A person regularly engaged in radio or allied work for at least ten years, who, by invention or contribution to the advancement of engineering or science in radio or allied fields, or to the technical literature thereof, has attained a standing at least equivalent to that required for Fellow under paragraph "*a*" or "*b*."

Sec. 3—Senior Member: For admission or transfer to the grade of Senior Member, a candidate shall be at least twenty-six years of age and shall be:

a. An engineer or scientist in radio or allied fields. As such he shall have performed and taken responsibility for important engineering or scientific work in these fields and shall have been in the active practice of his profession for at least six years, or

b. A teacher of radio or allied subjects for at least six years in a school of recognized standing. He shall have been in responsible charge of a major course in such fields, or

c. A person regularly employed in radio or allied work for at least six years, who by invention or by contribution to the advancement of engineering or science in radio or allied fields, or to the technical literature thereof, has attained a standing equivalent to that required for Senior Member under paragraph "*a*," or

d. An executive who, for at least six years, has had under his direction important engineering or research work in radio or allied fields and who is qualified for direct supervision of the technical or scientific features of such activities.

Sec. 4—Member: For admission or transfer to the grade of Member, a candidate shall be at least twenty-four years of age and shall be either:

a. An engineer or scientist in radio or allied fields. As such he shall have demonstrated competence in engineering or scientific work of professional character and shall have been in active practice of his profession for at least three years, or

b. A teacher of radio or allied subjects for at least three years.

Sec. 5—Associate: For admission or transfer to the grade of Associate, a candidate shall be at least eighteen years of age and shall be interested in the theory or practice of radio engineering or of the allied arts and sciences.

Sec. 6—Student: For admission to the grade of Student, a candidate shall be devoting a major portion of his time as a registered student in a regular course of study in engineering or science in a school of recognized standing. Membership in this grade shall not extend more than one and one-half years beyond the termination of his student status as described above.

Sec. 7—The term "allied" as used in this Constitution and Bylaws refers to electrical communication, electronics, and such other technical fields as are directly contributory to or derived from radio.

Sec. 8—The expression "school of recognized standing" includes only schools of college grade providing an engineering or scientific curriculum of not less than four years and granting degrees, and such other schools as may be so designated by the Board of Directors.

Sec. 9—Graduation from a radio or electrical course of a school of recognized standing shall be accepted as equivalent to one year's experience in radio or allied fields. Full-time graduate work, or part-time graduate work with teaching, in radio or allied courses in a school of recognized standing, shall be accepted as equivalent to professional experience, for a period not exceeding two years.

Sec. 10—The time requirements for admission to any grade of membership may be satisfied by applying *pro rata* the experience of the candidate under the various alternative requirements for that grade.

Sec. 11—The terms "member" and "membership" when printed without an initial capital where used in this Constitution and Bylaws include all grades.

Sec. 12—The term "voting member" where used in this Constitution and Bylaws means a member entitled to vote on Institute matters.

ARTICLE III

ADMISSIONS, TRANSFERS, AND EXPULSIONS

Sec. 1—Admission or transfer to Fellow grade shall be by invitation by the Board of Directors only.

Sec. 2—Applications for admission or transfer to any grade of membership, except Fellow, shall be submitted to the Board of Directors. An affirmative vote of at least two thirds of the Board members voting shall elect or transfer an applicant to any grade.

Sec. 3—A reapplication for admission or transfer may be made after the expiration of one year from the date of a rejection.

Sec. 4—The admission fee and dues are payable on notification of election and if not received within six months from notification, the election shall be considered void.

Sec. 5—A member in good standing may resign by submitting a written resignation to the Secretary.

Sec. 6—Subject to the approval of the Board of Directors, a resigned member may resume his membership upon payment of current dues.

Sec. 7—When a member's dues become four months in arrears his membership shall terminate. Subject to the approval of the Board of Directors, membership may be resumed on payment of all dues in arrears or on payment of a new entrance fee and current dues.

For purposes of Article II, Section 1-d, resumption of membership as provided under Sections 6 and 7 of this Article shall not constitute maintenance of continuous membership.

Sec. 8—To initiate action toward expulsion of a member, a written complaint must be submitted to the Board of Directors, which, if it deems the reason sufficient, shall notify the accused by letter of the charges against him and of the place and date of the hearing, which shall be at least twenty days away. The accused may present his defense in person, in writing, or by an authorized representative. There shall be a majority of the members of the Board of Directors present at the hearing and the votes cast must be unanimous in order to expel. The action of the Board of Directors shall be final and conclusive.

ARTICLE IV

ENTRANCE FEES AND DUES

Sec. 1—The entrance fee for all grades shall be three ($3.00) dollars except that there shall be no entrance fee for Student grade.

Sec. 2—There shall be no transfer fees.

Sec. 3—The annual dues for all grades shall be ten ($10.00) dollars except for Student which shall be three ($3.00) dollars and except for Associate which shall be seven ($7.00) dollars for each year that is within the first five years of membership in any grade or grades other than Student. Thereafter, the annual Associate dues shall be ten ($10.00) dollars beginning the January first following. The clause increasing Associate dues from seven ($7.00) dollars to ten ($10.00) dollars shall take effect on January 1, 1946.

Sec. 4—The annual dues shall be payable in advance on the first day of January.

Sec. 5—Under exceptional circumstances, the payment of fees and dues may be deferred or waived in whole or in part by the Board of Directors.

ARTICLE V

OFFICERS

Sec. 1—The governing body of the Institute shall be the Board of Directors and shall consist of the President, Vice President, Secretary, Treasurer, Editor, nine elected Directors, five appointed Directors, and the two most recent past Presidents.

Sec. 2—Except for the elected Directors, the terms of all officers shall be for one year each.

Sec. 3—The terms of the elected Directors shall be for three years each.

Sec. 4—Each year of a term of office established in Article V shall begin with the assembly of the Board of Directors at its annual meeting and terminate with the assembly of the Board of Directors at its following annual meeting.

Sec. 5—No officer shall receive, directly or indirectly, any salary, compensation, or emolument from the Institute, either as such officer, or in any other capacity, unless authorized by a vote of a majority of the entire Board of Directors, except as authorized by the Bylaws.

ARTICLE VI

MANAGEMENT

Sec. 1—The President shall be the regular presiding officer at meetings of the Board of Directors and at meetings of the Institute. He shall be an *ex officio* member of each committee.

The Vice President shall assume the duties of the President in the absence or incapacity of the President.

In the event that neither the President nor the Vice President can personally act, the Board of Directors may elect a chairman from its membership who is authorized to perform the presidential duties during the period of the incapacity of the President and Vice President. The tenure of such temporary chairman shall be at the discretion of the Board of Directors.

Sec. 2—The Board of Directors shall manage the affairs of the Institute. An annual report shall be made to the members on the activities and finances of the Institute.

Six members of the Board of Directors shall constitute a quorum.

Sec. 3—The Board of Directors may make, amend, or revoke Bylaws to this Constitution. The proposed changes and reasons therefor shall be mailed to all members of the Board at least twenty days before the stipulated meeting at which the vote shall be taken. Two thirds of all votes received at the stipulated meeting shall be required to approve any new Bylaw, amendment, or revocation.

Sec. 4—The Secretary shall attend all meetings of the Board of Directors and principal meetings of the Institute and prepare the business and record the proceedings thereof. He shall have charge of the books of account of the Institute, and shall furnish from them such information as is requested by the Board of Directors. He shall conduct the correspondence of the Institute and keep full records thereof.

The Institute shall secure a surety bond on the Secretary. An annual audit of the affairs of the Institute shall be made by certified public accountants and submitted to the Board.

Sec. 5—The Treasurer, under the control of the Board of Directors, shall have general supervision of the fiscal affairs of the Institute.

Sec. 6—All funds received by the Institute shall be deposited in an account requiring the signatures of at least two of the following for withdrawal: President, Vice President, Secretary, Treasurer, and Editor. Funds from this account may be deposited in other accounts authorized and limited in size by the Board of Directors. Funds from these accounts shall be withdrawable on the signatures of authorized bonded individuals for current disbursements. Before additional funds are transferred from the first-mentioned account to another account, the individuals responsible for such other accounts shall submit a statement of the disposition of the previously expended funds to the Treasurer.

Sec. 7—All committees shall be appointed by the Board of Directors.

Sec. 8—The fiscal year of the Institute shall end with the thirty-first day of December.

ARTICLE VII

NOMINATION AND ELECTION OF PRESIDENT, VICE PRESIDENT, AND THREE DIRECTORS, AND APPOINTMENT OF SECRETARY, TREASURER, EDITOR, AND FIVE DIRECTORS

Sec. 1—On or before July first of each year, the Board of Directors shall submit to qualified voters a list of nominations containing at least one name each for the office of President and Vice President and at least six names for the office of elected Director and shall call for nominations by petition.

Nominations by petition may be made by letter to the Board of Directors setting forth the name of the proposed candidate and the office for which it is desired he be nominated. For acceptance a letter of petition must reach the executive office before twelve o'clock noon on the last weekday prior to August fifteenth of any year and shall be signed by at least thirty-five voting members.

Each proposed nominee shall be consulted and if he so requests his name shall be withdrawn. The names of proposed nominees who are not eligible under the Constitution shall be withdrawn by the Board.

On or before September first, the Board of Directors shall submit to the voting members as of August fifteenth, a list of nominees for the offices of President, Vice President, and elected Director, the names of the nominees for each office being arranged in alphabetical order. The ballots shall carry a statement to the effect that the order of the names is alphabetical for convenience only and indicates no preference.

Voting members shall vote for the candidates whose names appear on the list of nominees, by written ballots in plain sealed envelopes, enclosed within mailing envelopes marked "Ballot" and bearing the member's written signature. No ballots within unsigned outer envelopes shall be counted. No votes by proxy shall be counted. Only ballots arriving at the executive office before twelve o'clock noon on the last weekday prior to October twenty-fifth shall be counted. Ballots shall be checked, opened, and counted under the supervision of the Tellers Committee between October twenty-fifth and the first Wednesday in November. The result of the count shall be reported to the Board of Directors at its first meeting in November and the nominees for President and Vice President and the three nominees for Director receiving the greatest number of votes shall be declared elected. In the event of a tie vote the Board shall choose between the nominees involved.

Sec. 2—The five appointed Directors, Secretary, Treasurer, and Editor shall be appointed by the Board of Directors at its annual meeting to serve until the next annual meeting.

Sec. 3—The Board of Directors is authorized to fill a vacancy occurring in the governing body.

ARTICLE VIII

MEETINGS

Sec. 1—There shall be an annual meeting of the Board of Directors during January of each year at which newly elected officers shall begin their terms of service, and the Board shall make necessary appointments. There shall be a meeting of the Board of Directors in November on or after the first Wednesday to receive the report of the Tellers Committee.

Sec. 2—There shall be an annual meeting of the Institute as soon as practicable after the annual meeting of the Board of Directors at which general reports of the Secretary and Treasurer shall be presented.

Sec. 3—Meetings of the Board may be held at such times as are necessary to carry out the provision of this Constitution and shall be held at such other times as any five members of the Board may determine, but only on notice to all members of the Board.

ARTICLE IX

SECTIONS AND OTHER GROUPS

Sec. 1—The Board of Directors may authorize the establishment of Sections and other groups of members for the purpose of promoting the interests of the Institute. The Board of Directors may, at its discretion, terminate the existence of any such group.

ARTICLE X

AMENDMENTS

Sec. 1—Amendments to this Constitution may be proposed by means of a resolution adopted by the Board of Directors or by means of a petition signed by at least thirty-five voting members. Such proposed amendment or amendments shall be submitted to legal counsel by the Board of Directors, and, if in the opinion of such counsel, they are in accordance with the laws under which the Institute is organized, a copy shall be mailed with a letter ballot to each member.

Sec. 2—Constitutional amendment ballots shall be mailed to the voting members at least sixty days before the date appointed for counting the ballots and the ballots shall carry a statement of the time limit for their return to the executive office. The ballots after marking shall be placed in plain sealed envelopes, enclosed within mailing envelopes marked "Ballot" and bearing the member's written signature. Only ballots within signed outer envelopes shall be counted. No votes by proxy shall be counted. Only ballots arriving at the executive office prior to the stated time limit shall be counted. The Tellers Committee shall count such votes and report to the Board of Directors at its next meeting. If the total vote be at least twenty (20%) per cent of the total voting membership and if at least seventy-five (75%) per cent of all votes cast shall be favorable, the proposed amendment or amendments shall become part of this Constitution.

Sec. 3—Amendments shall take effect thirty days after their adoption, but officers and officers-elect of the Institute at the time any amendment becomes effective shall continue in office until the end of the terms for which they were elected.

Sec. 4—Copies of the amendments shall be distributed to the members as soon as practicable after adoption.

Sec. 5—A complete history of amendments shall be kept in the files of the Institute.

BYLAWS

(As of March 6, 1946)

Article VI, Section 3, of the Institute Constitution provides for Bylaws as follows:

"The Board of Directors may make, amend, or revoke Bylaws to this Constitution. The proposed changes and reasons therefor shall be mailed to all members of the Board at least twenty days before the stipulated meeting at which the vote shall be taken. Two thirds of all votes received by the stipulated meeting shall be required to approve any new Bylaw, amendment, or revocation."

MEMBERSHIP

Sec. 1—Institute members are authorized to use the following abbreviations or symbols indicating their grade of membership:

Fellow—F.I.R.E.
Senior Member—S.M.I.R.E.
Member—M.I.R.E.
Associate—A.I.R.E.

Sec. 2—The emblem of the Institute is copyrighted and shall be reproduced only in connection with official business of the Institute.

Sec. 3—Applicants for membership shall furnish names of references as follows:

For Senior Member—Five Fellows or Senior Members.

For Member—Four Fellows, Senior Members, or Members.

For Associate—Three Fellows, Senior Members, Members, Associates, or other responsible individuals.

For Student—A member of the faculty of his school.

Sec. 4—When the work or location of an applicant for Senior Member or Member grade is such as to make impracticable compliance with Section 3, the Admissions Committee may waive that section upon obtaining other suitable references.

Sec. 5—The name of each newly admitted or transferred Senior Member, Member, or Associate shall be published in the Proceedings.

Sec. 6—A notice of his election shall be sent to each newly admitted member together with a bill for his entrance fee and dues, if not previously paid, dues being computed for the remainder of the calendar year beginning with the quarter next succeeding the date of his election. His entrance fee or dues remaining unpaid, additional bills shall be sent the newly elected member sixty days and one hundred and twenty days after notification of his election, in the last instance accompanied by a warning that his election will be considered void if his admission fee and dues are not received within six months of his notification of election.

The names of all individuals elected to membership who fail to pay admission fees or dues within six months of notification of election shall be turned over to the Membership Committee.

Sec. 7—The name of each applicant for admission to the Institute except in the case of Senior Member or Member grade, shall be placed on the mailing list for the Proceedings immediately upon admission to membership and the receipt of his entrance fee and dues.

Sec. 8—The name of each applicant for admission to the grade of Senior Member or Member shall be placed on the mailing list for the Proceedings immediately upon receipt of his application and the entrance fee.

Sec. 9—Proceedings will be sent to members for a period not shorter than that covered by the payment of dues. Upon request, a newly admitted member may receive the Proceedings for previous quarters of the current year provided dues are remitted for such additional period.

Sec. 10—Admission or transfer to any grade except Fellow may be proposed by any member acting as sponsor, or by the Membership Committee, by supplying to the Admissions Committee sufficient information and testimonials from the required number of references to satisfy the Admissions Committee as to qualifications. Such proposals shall be acted upon by the Admissions Committee, and, if approved, transmitted to the Board of Directors for their action. If approved by the Board of Directors, an Invitation Blank shall be sent to the proposed member inviting him to accept the grade of membership proposed which membership grade shall become effective automatically and immediately upon his supplying the biographical and professional information required, and paying the necessary dues and fees. The name of an invitee shall be placed on the mailing list for the Proceedings immediately upon receipt of dues and fees. The proposal and invitation blanks shall be drawn up by the Membership Committee so as to avoid unconstitutional action due to the sponsor supplying incorrect information.

Sec. 11—The Membership Committee may recommend for transfer to higher grade those members who they think are qualified.

Sec. 12—Each year, the Awards Committee shall recommend to the Board of Directors nominees for Fellow grade. A citation summarizing the accomplishments of the nominee shall be a part of each recommendation.

Sec. 13—Diplomas shall be presented to the newly elected Fellows. If practicable, this presentation shall be made by the President at the next Annual Convention.

Sec. 14—A bill shall be sent to each member not later than December 31 covering his dues for the following year. A second bill shall be mailed on or about March first to each member whose dues remain unpaid. Not later than April first, each member whose dues remain unpaid shall be so notified by the Secretary and informed that, in accordance with Article III, Section 7, of the Constitution, should his dues remain unpaid after April 30, his membership will terminate and he will lose the right to vote and to receive the publications of the Institute. On May first, the name of each member whose dues remain unpaid shall be removed from the roll of membership and such member shall be sent a notice to the effect that according to Article III, Section 7, his membership in the Institute has in fact terminated. The list of such terminated memberships shall be turned over to the Membership Committee.

Sec. 15—The mailing of bills or statements to the last known address of a member shall be considered a valid notice of indebtedness.

Sec. 16—On resuming membership and paying dues in arrears, a member may receive available copies of the Proceedings during the period covered by the back dues. A rebate of twenty-five (25¢) cents per copy will be made in lieu of copies of the Proceedings not available.

Sec. 17—The Board, by this Bylaw, waives the dues of each and every member of the Institute who has attained the age of sixty-five years and has been a member of the Institute for thirty-five years.

Sec. 18—The Secretary shall, as soon as possible after the end of each year, present to the Board of Directors a report giving the number of members of each grade at the close of the year, and the gains and losses in each grade of membership during the year as a result of elections, transfers, reinstatements, debts, resignations, failure to pay dues, and all other causes. This report shall also give the number of newly elected members whose elections become void during the year through the failure to pay entrance fee and initial dues, and the number of newly elected members who at the end of the year have not yet paid entrance fee and initial dues but whose election is still effective as of that date

BOARD OF DIRECTORS

Sec. 19—Regular meetings of the Board of Directors shall be held in the office of the Institute in New York, N. Y., on the first Wednesday of each month except in July and August, unless otherwise set as provided for in Section 20.

Sec. 20—The time or place of a regular Board meeting may be altered or the meeting canceled only by majority vote of all Board members not less than twenty days before the original date or the new date set for the meeting, whichever is the earlier. Notice of such change shall be given all Board members by mailing notice not less than ten days before the original or the new date, whichever is the earlier.

Sec. 21—As provided in the Constitution, special meetings of the Board of Directors may be called by any five members of the Board on notice to all other members. Notice of such special meeting, giving the time and place of meeting, the purpose of the meeting, and the names of the Board members calling the meeting shall be mailed to all Board members not less than twenty days before the date set for the special meeting. The place of such special meetings may be only the Institute office in New York, N. Y., unless otherwise authorized by a majority vote of all Board members.

EXECUTIVE COMMITTEE

Sec. 22—The Board of Directors in managing the affairs of the Institute according to the Constitution shall appoint a committee of Officers and members of the Board of Directors called the Executive Committee to exercise powers and assume duties of executive management to the extent that the Board of Directors directs and as outlined in Bylaws subject to the following limitations: that the Board may by a majority vote of those present at any meeting overrule any act or decision of the Executive Committee, except insofar as any act has in fact been carried out, or suspend at any meeting any power conferred upon the Executive Committee, such suspension to remain in effect pending repeal of the Bylaw conferring such power, or direct any action or plan of the Executive Committee.

Sec. 23—The Executive Committee shall direct and co-ordinate the work of all standing committees except Appointments, Awards, Constitution and Laws, Executive, Investments, Nominations, and Tellers, unless the Board of Directors directs otherwise.

Sec. 24—The Executive Committee shall approve all membership applications below Fellow grade if and when such applications comply with entrance or transfer routines specified in the Constitution and Bylaws. The Executive Committee shall handle readmissions on the basis of policies established by the Board.

Sec. 25—The Executive Committee shall direct the formulation of and present the annual budget to the Board of Directors for approval.

Sec. 26—The Executive Committee shall be responsible for the management of the office of the Institute, which shall include special activities, technical activities, office operations, accounting, advertising, and publications, and the setting of salaries (with the exception of Officers' salaries) in all instances in the limits of the budget. Such activities as the Executive Committee shall direct shall be administered by the Executive Secretary. The salary of the Executive Secretary shall be determined by the Executive Committee.

Sec. 27—The Executive Committee shall set dates and locations of conventions, conferences, and meetings of the Institute and shall manage them.

Sec. 28—The Executive Committee shall supervise the formation and operation of Sections and propose their approval to the Board of Directors.

Sec. 29—The Executive Committee shall direct and manage Institute standardization activities including relations with other organizations.

Sec. 30—The Executive Committee may divide its duties and responsibilities among its members as it sees fit and conduct its business as it finds necessary, and shall formulate a "Code of Administrative Practice."

Sec. 31—Minutes of the meetings of the Executive Committee shall be sent to the members of the Board of Directors.

Sec. 32—In addition to its other duties, the Executive Committee is charged with broadly considering Institute policies, and making appropriate recommendations to the Board of Directors on its own initiative.

NOMINATIONS

Sec. 33—The Secretary shall circularize all Section Chairmen and Secretaries before March first of each year requesting the submission of suitable names to be considered by the Nominations Committee for the various elective offices.

Sec. 34—The Nominating Committee shall submit more than one name for each elective office.

Sec. 35—The Nominating Committee shall transmit its list of proposed nominees to members of the Board of Directors at least a week before the date at which the Board is expected to act upon them.

Sec. 36—When the Board of Directors has not scheduled a meeting to be held between August 14 and September first of each year, the Executive Committee is authorized to take any necessary actions on any petitions and to approve the ballot.

SECTIONS

Sec. 37—A petition for the formation of a Section shall be signed by not fewer than twenty-five Fellows, Senior Members, Members, and Associates with mailing addresses within the proposed territorial limits.

Sec. 38—The territory of a Section shall be specified by the Board of Directors.

Sec. 39—All Sections shall accept and conform to a "Constitution for Sections" provided by the Institute Board of Directors.

Sec. 40—For Section maintenance, the Institute shall pay to each Section for each calendar year the following sums:

Seventy-five (75¢) cents per member for each member up to and including seven hundred and ninety (90¢) cents per member for each member over seven hundred plus ten ($10.00) dollars per meeting for not more than ten meetings.

"Member" means Fellows, Senior Members, Members, and Associates with mailing addresses within the territory of the Section, on December 31st of the calendar year for which payment is made, and "meeting" means meetings of the Section within the calendar year.

Sec. 41—Sections shall have no authority to contract debts for, pledge the credit of, or in any way bind the Institute.

Sec. 42—Section Secretaries shall forward to the Secretary of the Institute a report of each meeting held by the Section for the presentation or discussion of papers, and during January of each year a financial statement for the preceding year.

Sec. 43—A Section of the Institute may co-operate with other organizations in the holding of joint meetings and may invite members of such organizations and the public to its meetings.

Sec. 44—Failure of a Section to maintain the required activities, which shall include the holding of at least five meetings each year and also the maintenance of a minimum membership of twenty-five Fellows, Senior Members, Members, and Associates, shall place the Section on probation. All members of the Section shall be informed of the probation by the Secretary of the Institute who shall also call to their attention the requirements for maintaining the Section.

If the delinquency continues for a second year, a second notification to the Section membership shall be made by the Institute Secretary and the Board of Directors shall be informed of the probationary status of the Section.

If the delinquency continues for a third year, the Section shall, thereupon, be dissolved. The Secretary shall so report to the Board of Directors and so inform the Section membership.

The Board of Directors is authorized to waive, in whole or in part, the application in any particular case of the contents of this Bylaw during war and six months thereafter.

COMMITTEES AND REPRESENTATIVES

Sec. 45—The standing committees, each of which shall normally consist of five or more persons, shall include the following:

Admissions
Appointments
Awards
Board of Editors
Constitution and Laws
Education
Executive Committee of the Board of Directors
Investments
Membership
Nominations
Papers Procurement
Papers Review
Public Relations
Sections
Tellers
Annual Review
Antennas
Circuits
Electroacoustics
Electron Tubes
Facsimile
Frequency Modulation
Handbook
Industrial Electronics
Medical Electronics
Radio Receivers
Radio Transmitters
Radio Wave Propagation and Utilization
Railroad and Vehicular Communication
Research
Standards
Symbols
Television

On matters which are reasonably described by the committee names, these committees shall be advisory to the Board of Directors or the Executive Committee, whichever appoints them and directs their activities.

The terms of appointments of the Admissions, Awards, Board of Editors, Constitution and Laws, Education, Investments, Membership, Nominations, Papers Procurement, Papers Review, Public Relations, Sections, and Tellers Committees shall start with the first day of the month following appointment and continue until the date the succeeding terms of appointments take effect. The Board may specifically advance or delay the terminating date of any committee and the starting date of a succeeding committee. Appointments shall be made to the following committees: Annual Review, Antennas, Circuits, Electroacoustics, Electron Tubes, Facsimile, Frequency Modulation, Handbook, Industrial Electronics, Medical Electronics, Radio Receivers, Radio Transmitters, Radio Wave Propagation and Utilization, Railroad and Vehicular Communication, Research, Standards, Symbols, and Television, each year between January first and May first and the terms of appointment shall be from May first of the year when the appointments are made until April thirtieth of the following year. Additional appointments may be made to fill vacancies or to care for special cases as the need arises, with the term of the appointment expiring April thirtieth.

Sec. 46—The Membership Committee shall include the Chairman of the Membership Committee of each Section, *ex officio.*

Sec. 47—The Sections Committee shall include the Chairman of each Section, *ex officio.*

Sec. 48—The Appointments Committee shall be appointed by the Board of Directors at its regular November meeting. Its membership shall be chosen from the continuing and newly elected members of the Board of Directors. At least fourteen days before the next annual meeting of the Board of Directors, the Appointments Committee shall mail to the members of the new Board of Directors, a list of candidates for the offices of Secretary, Treasurer, Editor, and Appointed Directors, and Chairmen and members of the Awards, Constitution and Laws, Executive, Investments, Nominations, and Tellers Committees.

Sec. 49—The Executive Committee shall appoint all standing committees except the Appointments, Awards, Constitution and Laws, Executive, Investments, Nominations, and Tellers Committees.

Sec. 50—The President, the Secretary, the Treasurer, the Editor, and at least two other members of the Board of Directors shall comprise the Executive Committee. The President shall be Chairman, the Treasurer shall be Vice Chairman, and the Secretary shall be Secretary of the Executive Committee. The terms of appointments of all members of the Executive Committee, except the President, shall start with the first meeting of the Committee after appointment and shall continue notwithstanding any change in status on the Board until the first meeting of the succeeding Executive Committee.

Sec. 51—The Investments Committee shall consist of the Treasurer as Chairman, the President, the Secretary, with such additional members as the Board may wish to appoint.

The Investments Committee is authorized to buy and sell securities in the name of the Institute by means of an order upon the Custodian of Institute Securities, signed by two members of the Investments Committee.

Sec. 52—The President is authorized to appoint teachers of science or engineering who are Institute members as Institute Representatives. Each such Institute Representative is charged with promoting the welfare of the Institute at his school, particularly in matters relating to Student membership.

Sec. 53—The Board of Directors may appoint or direct the appointment of representatives of the Institute on joint committees, boards, and other local, national, and international bodies.

PUBLICATIONS

Sec. 54—The Institute shall publish a periodical under the title, Proceedings of the Institute of Radio Engineers. The Board of Directors may establish additional publications either periodical or otherwise in character.

Sec. 55—The Secretary is authorized to receive annual subscriptions to the monthly Proceedings at the rate of ten ($10.00) dollars per annum with an extra postage charge when the bulk rate of postage does not apply. A discount of fifty (50%) per cent from the subscription price of ten ($10.00) dollars will be allowed to colleges and public libraries upon direct subscription to Institute headquarters. Members, publishers, and subscription agencies may be allowed a discount of twenty-five (25%) per cent.

Sec. 56—The price of a single annual subscription to the Proceedings for a Fellow, Senior Member, Member, or Associate shall be six ($6.00) dollars; to be included in his annual dues as specified in Article IV of the Constitution.

Sec. 57—The price of copies of the Proceedings supplied to a newly admitted Fellow, Senior Member, Member, or Associate in advance of the period for which dues are payable shall be included in his entrance fee which is specified in Article IV of the Constitution.

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CONSTITUTION FOR SECTIONS OF THE I.R.E.

ARTICLE I

NAME AND OBJECT

SEC. 1—This organization shall be known as the............ Section of The Institute of Radio Engineers, Inc.

SEC. 2—The Section shall strive for the advancement of the theory and practice of radio engineering and of the allied arts and sciences, and the maintenance of a high professional standing among its members, all in consonance with the Constitution and Bylaws of the Institute and with special attention to such aims within the territory of the Section as are hereinafter defined.

SEC. 3—The Section shall aid in promoting close co-operation and good fellowship among its members and to this end shall hold meetings for the transaction of the regular business of the Section and for the presentation of papers and their discussion.

ARTICLE II

MEMBERSHIP

SEC. 1—All members of the Institute residing within the territory of the Section are automatically members of this Section. There shall be no other grades of membership.

SEC. 2—All Fellows, Senior Members, Members, and Associates of the Institute residing within the territory of the Section shall be entitled to attend meetings, vote, and hold office, except that only members of Member or higher grade may hold the office of Chairman.

SEC. 3—Student members of the Institute shall be entitled to attend meetings but shall not have the right to vote or hold office.

ARTICLE III

TERRITORY

SEC. 1—The territory of the Section shall be set by the Board of Directors, and may be enlarged, reduced, or otherwise altered by the Board at any time.

SEC. 2—Whenever within a Section circumstances arise which indicate the need for meetings in different areas, it shall be permissible for the Section to foster and inaugurate one or more Subsections locally to carry out the functions of obtaining speakers and holding meetings.

SEC. 3—A Subsection may be formed and operated on any plan not inconsistent with the powers of the Executive Committee.

ARTICLE IV

DUES

SEC. 1—There shall be no Section dues.

SEC. 2—The ordinary expenses of the Section shall be defrayed by the funds supplied by the Institute.

SEC. 3—Emergency or extraordinary expenses may be provided for by voluntary contribution from the membership of the Section. A unanimous vote of the Executive Committee is required before such a request may be made.

SEC. 4—The Section may require nonmembers, who wish to be placed on the mailing list for notices, to pay in advance for the estimated cost of such notices.

ARTICLE V

OFFICERS

SEC. 1—The officers of the Section shall be a Chairman, a Vice-Chairman, and a Secretary-Treasurer.

SEC. 2—The terms of office for all officers shall begin at the close of the annual meeting, or as soon thereafter as the election result is determined, and shall end at the close of the next annual meeting, or as soon thereafter as the result of the election of new officers is determined, and in any case continue until their successors are duly elected and take office.

SEC. 3—The terms of office set forth above shall be approximately one year and may exceed this interval only in the case where the date of the annual meeting is being changed and a continuation in office is necessary to effect the new schedule, or no successor has been elected or appointed.

ARTICLE VI

MANAGEMENT

SEC. 1—There shall be an Executive Committee consisting of at least the officers, the Junior Past-Chairman, and the Chairmen of all the standing committees listed in Section 5 of Article VI.

The Chairman may appoint, subject to confirmation by a majority vote of the above members of the Executive Committee, additional members to the Executive Committee from the Section membership.

SEC. 2—The Chairman, responsible to the Executive Committee, shall have general supervision of the affairs of the Section. He shall preside at meetings of the Section and the Executive Committee and have such other powers and perform such other duties as may be provided for in the Bylaws, or as may be delegated to him by vote of the Section. In his absence his duties shall be performed by the Vice-Chairman.

SEC. 3—The Secretary-Treasurer shall receive and deposit all monies in the name of the Section in such depository as shall be determined by the Executive Committee. He shall make only such disbursements as shall be ordered by the Executive Committee.

SEC. 4—The Secretary-Treasurer shall send out notices, prepare the agenda for, and record the Minutes of all meetings of the Section and of the Executive Committee. He shall make such reports of his activities as may be required by the Executive Committee of the Institute.

SEC. 5—The Chairman, as soon as expedient after the annual meeting, shall appoint the following standing committees:

Meetings and Papers Committee
Membership Committee
Publicity Committee

Members appointed shall serve until their successors are appointed or the committee dissolved.

Other committees may be authorized by vote of the Section at any regular meeting, and shall be appointed by the Chairman of the Section.

SEC. 6—The Chairman shall, when notified of the annual meeting of the Committee on Sections, arrange for representation of his Section at such annual meeting by himself or by some member of his Section or he shall forward a letter to the Committee Chairman explaining inability to provide representation and giving the views of his Section on the agenda or proposals before the meeting.

Failure to comply with the above shall be punished by a fine of ten ($10.00) dollars to be deducted from the rebates to the Section. Sections, so remotely located as to make the requirements unusually difficult, may be excused by the Sections Committee from these penalties.

The above penalty shall not be exacted if the Chairman of the

Sections Committee shall fail to forward to each Section Chairman and Secretary, at least forty-five days in advance of the date of the annual meeting of the Sections Committee, notice of that meeting and the agenda to be considered thereat.

ARTICLE VII

NOMINATION AND ELECTION OF OFFICERS

SEC. 1—All officers shall be elected at the annual meeting of the Section upon nomination by a nominating committee of three members not then officers of the Section, duly appointed by the Chairman of the Section two months before the annual meeting. These nominations shall be announced in the notice of the annual meeting. Nominations may also be made from the floor.

SEC. 2—When at an annual meeting there is more than one nominee for any one of the offices of Chairman, Vice-Chairman, or Secretary-Treasurer, the Chairman of the Section may conduct the election at the annual meeting if it is evident that a fair expression of the wishes of the membership can be then determined. As an alternative, he may announce that the results shall be determined by a letter ballot to be taken prior to the next regular meeting of the Section.

SEC. 3—In the event that election of officers is to be determined by letter ballot, the Secretary shall provide promptly to each voting member of the Section a letter ballot with return envelope as used by the Institute and with a return date specified, which shall in no case be later than six weeks after date of the annual meeting.

The Chairman shall call a meeting of the Executive Committee to constitute a Tellers Committee to count the vote and determine the successful candidate.

The Chairman shall inform the successful candidates of their election and arrange for the transfer of responsibility to the new officers without delay.

SEC. 4—Vacancies in office occurring during the year shall be filled by the Executive Committee for the remainder of the unexpired term unless otherwise provided for.

SEC. 5—If for any reason the best interests of the Section seem to require a change in the governing body during the year, the matter shall be duly and carefully considered by the Executive Committee. Upon not less than two-thirds vote of the Executive Committee, or upon receipt by the Executive Committee of a petition signed by fifteen members of the Section, recommendation shall be made to the Section for action at a special meeting to be duly called by the Executive Committee for the sole purpose of considering and voting upon such a change.

A two-thirds vote of the members present shall be necessary to declare an office vacant. Upon two-thirds vote of the members present the vacant office may be filled for the unexpired term upon nominations from the floor.

ARTICLE VIII

MEETINGS

SEC. 1—The Section shall not hold less than five regular meetings during the year, one of which shall be an annual meeting.

SEC. 2—These meetings shall be held at some specific time in the year as prescribed in the Section Bylaws.

SEC. 3—The fiscal year of the Section shall correspond with the fiscal year of the Institute. (Calendar year.)

SEC. 4—At least fifteen members shall be present to constitute a quorum at all meetings of the Section called for the transaction of regular business and requiring a vote to be taken, but a higher number may be set to constitute a quorum, such number to be determined by a Bylaw voted upon by the Section membership.

SEC. 5—A plurality vote of the members present is necessary for the election of officers.

SEC. 6—Meetings of the Executive Committee shall be held at such times as shall be found necessary. Executive Committee meetings may be called by the Chairman of the Section at his own discretion or shall be at the request of three members of the committee.

SEC. 7—A majority of the members of the Executive Committee shall constitute a quorum at all meetings of the Executive Committee, except as otherwise provided herein.

SEC. 8—A majority vote of the Executive Committee shall be necessary, in the conduct of its business except as otherwise provided in this constitution or in the Section Bylaws.

SEC. 9—The Secretary-Treasurer shall send out notices of all regular Section meetings to all Institute members in the territory of the Section at least one week prior to the date of the meeting. These notices shall contain a full statement of the time, place, and business of the meeting.

ARTICLE IX

AMENDMENTS

SEC. 1—This Constitution may be amended by a two-thirds vote of all members present at any annual meeting of the Committee on Sections provided that notices of the proposed meeting and the proposed change has been sent to all members of the Committee on Sections at least one month in advance of the meeting. Such action shall be subject to the approval of the Board of Directors of the Institute.

SEC. 2—In the event of absence of any member of the Committee on Sections, he may vote by proxy on amendments to this Constitution.

SEC. 3—Suitable Bylaws to this Constitution may be adopted by a two-thirds vote of the Section provided they are consonant with the Constitution and Bylaws of the Institute and this Constitution. A copy of these Bylaws shall be filed in the Institute office.

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MEMBERSHIP LISTS

Including

BIOGRAPHIES OF FELLOWS

A LIST OF SENIOR MEMBERS

AND A

GEOGRAPHICAL LISTING

NOTE

In the following pages are set forth the names of the members of The Institute of Radio Engineers. These have been disposed under four headings, as follows:

Biographies of Fellows; a list of all Fellows, with a short biographical note on each.

Names of Senior Members; an alphabetical list of names only.

Membership Roster; a complete listing of all members (not including Students) on record as of August 15, 1945; giving membership grades, business affiliations, and mailing addresses.

Geographical Listing of Membership; by states and foreign countries, and by cities within such areas; including a designation of the present grade of each member.

The Roster and the Geographical Listing include names on record up to August 15, 1945. In the lists of Fellows and of Senior Members, it has been possible to include appointments and elections up to December 31, 1945.

In the Roster, the following symbols indicative of grade, are used; along with numerals of the year of admission to that grade:

(F)	*Fellow*
(SM)	*Senior Member*
(M)	*Member*
(A)	*Associate*
(VA)	*Voting Associate.* Those who were Associates on or before March 1, 1939, automatically became Voting Associates as of that time.
(S)	*Student*
(J)	*Junior.* This grade no longer exists.

BIOGRAPHIES OF FELLOWS

(As of December 31, 1945)

On the following pages will be found the biographical sketches of 213 Fellows of The Institute of Radio Engineers. In some few cases, the questionnaire form was not returned, and accordingly the information given is necessarily incomplete.

Late in 1941, it was decided that the Fellow grade should be made an honorary one and the recipients be selected solely by the Awards Committee and approved by the Board of Directors. The Fellowship awards are now made at the Winter Technical Meeting but the Fellow membership automatically begins at the meeting at which the awards are approved, one or two months previous to their bestowal. In the case of readmissions, when the Fellow grade was granted before the end of 1941, and before citations were granted, no citations are given.

MARCUS A. ACHESON
(A'36—M'37—F'41)

Manager, Advanced Development Department, Sylvania Electric Products, Inc., Kew Gardens 15, L.I., N.Y. Born: January 18, 1903, Denison, Texas. B.S. (E.E.), Rice Institute, 1924.

Committees: Papers, 1937.

ERNST F. W. ALEXANDERSON
(A'13—M'13—F'15)

Consulting Engineer, General Electric Company, Schenectady, N.Y. Born: January 25, 1878, Uppsala, Sweden. E.E., Royal Technical University, Stockholm, Sweden, 1900; Sc.D., Union College, 1926; Ph.D., Uppsala University, Sweden, 1938.

Medal of Honor, 1919, in

> "recognition of his pioneer accomplishments in the field of long-distance radio communication, including his development of the radio-frequency alternator which bears his name, a magnetic amplifier permitting effective modulation of the output of such an alternator, and a cascade radio-frequency vacuum-tube amplifier yielding exceptional total amplification."

John Ericsson Gold Medal, American Society of Swedish Engineers, 1944; Edison Medal, American Institute of Electrical Engineers, 1944; Odergren Gold Medal, Royal Swedish Technical University, 1944.

President, 1921; Vice-President, 1920; Manager, 1917–1919; Director, 1920–1921. Committees: Meetings and Papers, 1928; Standardization, 1916–1923; Wave Length Regulation, 1916, 1919.

ANDREW ALFORD
(A'35—M'40—F'42)

Head, Direction Finder and Antenna Division, Radio Research Laboratory, Harvard University, Cambridge, Mass. Born: August 5, 1904, Samara, Russia. A.B., University of California, 1924.

Fellow Award, 1942, for his

> "contributions to the theory of radiation and the design of short-wave antennas."

Committees: Annual Review, 1944–1945; Antennas, *chairman, 1944–1945*; Standards, 1944–1945; Transmitters and Antennas, 1943–1944; Transmitters, 1944–1945.

CLIFFORD N. ANDERSON
(A'19—F'34)

Member, Technical Staff, Bell Telephone Laboratories, Inc., New York, N.Y.; Lieutenant Commander, U. S. Naval Reserve, Bureau of Ships (935), Washington, D.C. Born: September 22, 1895, Scandinavia, Wisconsin. Ph.B., 1919, M.S., 1920, University of Wisconsin.

Committees: Admissions, 1930–1931; New York Program, 1932; Sections, 1941–1944; Tellers, 1932–1933.

EDWARD V. APPLETON
(A'26—F'31)

Secretary, Department of Scientific and Industrial Research, 24 Rutland Gate, London, S.W. 7, England. M.A., D. Sc., L.L.D., F.R.S.

Morris Liebmann Memorial Prize, 1929, for his

> "investigations in the field of wave propagation phenomena."

Vice-President, 1932; Director, 1932. Committees: Meetings and Papers, 1929; Wave Propagation, 1937–1938.

EDWIN H. ARMSTRONG
(A'14—F'27)

Professor of Electrical Engineering, Columbia University, 206 Philosophy Hall, New York 27, N.Y. Born: December 18, 1890, New York, N.Y. E.E., 1913,

D. Sc., Columbia University, 1929; D. Sc., Muhlenberg College, 1941.

Medal of Honor, 1917, in

> "recognition of his work and publications dealing with the action of the oscillating and non-oscillating audion."

Egleston Medal, Columbia University, 1939; Modern Pioneer Award, National Association of Manufacturers, 1940; Holley Medal, American Society of Mechanical Engineers, 1940; The Franklin Medal and Honorary Member, The Franklin Institute, 1941; The John Scott Medal, Board of City Trustees of the City of Philadelphia, 1941; Medal of Class of 1889, School of Mines, Columbia University, 1941; Edison Medal, American Institute of Electrical Engineers, 1943.

Manager, 1916–1922; Director, 1936–1938. Committees: Admissions, 1926; Awards, *chairman, 1936*; Frequency Modulation, 1941; Nominations, 1940; Radio Receivers, 1936–1941; Receiving Sets, 1927; Standardization, 1917–1921, 1924–1926; Tellers, *chairman, 1937*; Wave Length Regulation, 1916, 1919.

NOEL ASHBRIDGE
(F'38)

Deputy Director-General, British Broadcasting Corporation, Broadcasting House, London, W.1, England. Born: December 10, 1889, Wanstead, Essex, England. B. Sc. (Engineering), King's College, London University, 1911.

Fellow of King's College, London; Knight of the Royal Order of Dannebrog (Danish), 1934; James Watt Medal, The Institution of Civil Engineers, 1937; President, The Institution of Electrical Engineers, 1941–1942.

ARTHUR O. AUSTIN
(F'30)

Manufacturing Engineer, Box 109, Barberton, Ohio. Born: December 28, 1879, Stockton, Calif. A.B., Stanford University, 1903.

AUSTIN BAILEY
(A'25—M'25—F'36)

Telephone Engineer, American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y. Born: June 9, 1893, Lawrence, Kansas. A.B., University of Kansas, 1915; Ph.D., Cornell University, 1920.

Director, 1940–1942. Committees: Admissions, 1934; *chairman, 1935*; Awards, 1945; Constitution and Laws, 1932–1934, 1936–1942, 1944–1945; Membership, 1941; New York Program, 1930; *chairman, 1931*; 1932–1934, 1937; *chairman, 1938*; 1939–1940; Sections, 1929; *chairman, 1930*; 1931–1933; Tellers, *chairman, 1939*; 1940.

Institute Representative; American Standards Association, Sectional Committee on Graphical Symbols and Abbreviations for Use on Drawings, 1940–1945; Sectional Committee on Standards for Drawings and Drafting Room Practices, 1940–1945.

STUART L. BAILEY
(A'26—M'36—SM'43—F'43)

Partner, Jansky and Bailey, 970 National Press Building, Washington 4, D.C. Born: October 7, 1905, Minneapolis, Minn. B.S. (E.E.), 1927, M.S., University of Minnesota, 1928.

Fellow Award, 1943, for

> "pioneering accomplishment in the application of radio engineering principles to the solution of technical problems in broadcasting."

Director, 1943–1945. Committees: Admissions, 1943–1944; Broadcast, *alternate, 1931–1932*; 1934; Constitution and Laws, 1944; Executive, 1945; Radio Wave Propagation, 1937–1945; Sections, 1945.

W. R. G. BAKER
(A'19—F'28)

Vice-President in charge of Electronics Department, General Electric Company, Syracuse, N.Y. Born: November 30, 1892, Lockport, N.Y. B.E., 1916, M.E.E., 1918, Honorary D.S., 1935, Union College.

Director, 1940. Committees: Admissions, 1941; Awards, 1940; Broadcast, 1935; Meetings and Papers, 1926, 1928–1929; Membership, 1928; Nominations, 1930; Power Supply, 1928; Preparedness, 1941; Sections, 1931–1932; Standardization, 1925; Standards, 1938–1940.

Sections: Philadelphia, *chairman*, 1931; Connecticut Valley, *secretary*, 1938–1940.

JOHN A. BALCH
(M'17—F'40)

Chairman of the Board, Mutual Telephone Company of Hawaii, 2912–32 St., N.W., Washington 8, D.C. Born: August 6, 1876, San Francisco, Calif.

Marconi Medal, Pioneer Wireless Telegraph Operators, 1940.

WILMER L. BARROW
(A'28—VA'39—M'40—F'41)

Director, Fire Control Research, Sperry Gyroscope Company, Inc., Great Neck, L.I., N.Y. Born: October 23, 1903, Baton Rouge, La. M.S., Massachusetts Institute of Technology, 1929; Sc.D., Technische Hochschule, Munich, Germany, 1931.

Morris Liebmann Memorial Prize, 1943, for his

> "theoretical and experimental investigations of ultra-high-frequency propagation in wave guides and radiation from horns, and the application of these principles to engineering practice."

Fellow Award, 1941, for

> "pioneering investigation of ultra-high-frequency wave propagation and many of its practical applications."

Director, 1943–1945. Committees: Antennas, 1945–1946; Awards, 1944–1945; Constitution and Laws, 1943–1944; Executive, 1945; Nominations, 1943; Papers, 1941, 1943–1945; Papers Procurement, 1942–1943; Regular Papers Committee, 1941; Sections, *ex officio, 1939–1941*; Standards, 1938–1941; Wave Guides, 1943–1944; Wave Propagation, 1941.

Sections: Boston, *chairman*, 1939–1941.

Institute Representative: Radio Technical Planning Board, *alternate, 1944*; 1945.

F. SHERBROOKE BARTON
(F'35)

Director, Radio Engineering, British Air Commission, 1785 Massachusetts Ave., Washington, D.C. Born: May 13, 1895, Nottingham, England. Scholar, St. Johns College, Cambridge, 1914; M.A., University of Cambridge, 1920; B.Sc., University of London, 1920.

Vice-President, 1943; Director, 1943.

MAX C. BATSEL
(A'21—F'27)

Chief Engineer, Engineering Products, Engineering Department, RCA Manufacturing Company, Inc., Indianapolis, Ind. Born: June 14, 1894, Fulton, Kentucky. B.M.E., University of Kentucky, 1915.

Director, 1933. Committees: Bibliography, 1930–1932; Meetings and Papers, 1928–1929; Membership, 1926–1927; New York Program, 1931–1933; Receiving Sets, 1927–1928; Standardization, 1925, 1927–1931; Use of the Transmission Unit, 1928.

F. J. BEHR
(A'13—M'13—F'20)

Colonel, 1013 Bella Vista Ave., Oakland 10, Calif.

Committees: Increase of Membership, 1913–1914.

EDWARD BENNETT
(M'17—F'18)

Professor Emeritus of Electrical Engineering, University of Wisconsin; Consulting Engineer, Madison, Wis. Born: October 26, 1876, Pittsburgh, Pa. E.E., University of Pittsburgh, 1897.

Manager, 1923–1925. Committees: Circuit Elements, 1928; Standardization, 1925–1928.

H. H. BEVERAGE
(A'15—M'26—F'28)

Associate Research Director, RCA Laboratories; Vice-President in charge of Research and Development, RCA Communications, 66 Broad St., New York 4, N.Y. Born: October 14, 1893, North Haven, Maine. B.S., 1915, D.E., 1938, University of Maine.

Morris Liebmann Memorial Prize, 1923, for his

> "work on directional antennas."

Medal of Honor, 1945, in

> "recognition of his achievements in radio research and invention, of his practical applications of engineering developments that greatly extended and increased the efficiency of domestic and world-wide radio communications, and of his devotion to the affairs of the Institute of Radio Engineers."

Armstrong Medal, 1938, Radio Club of America.

President, 1937; Past-President Director, 1938; Director, 1936–1939. Committees: Admissions, 1936, 1941, 1942–1945; Awards, *chairman, 1938*; 1939; Board of Editors, 1932–1937, 1944; High-Frequency Receivers, 1930–1931; New York Program, 1932–1935; Nominations, *chairman, 1942*; 1943; Radio Receivers, 1933; Standards, 1934.

HAROLD BISHOP
(F'38)

Controller of Engineering, British Broadcasting Corporation, Broadcasting House, London, W. 1, England. Born: October 29, 1900, London, England. B. Sc. (Eng.), City and Guilds (Engineering) College, University of London, 1920.

Institution Premium, Institution of Electrical Engineers, 1935; Commander of the (Order of the) British Empire, 1938.

OTTO B. BLACKWELL
(M'20—F'28)

Assistant Vice-President, American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y. Born: August 21, 1884, Bourne, Mass. S.B., Massachusetts Institute of Technology, 1906.

Committees: Standardization, 1920–1923.

RALPH BOWN
(M'22—F'25)

Assistant Director of Research and Director of Radio and Television, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: February 22, 1891, Fairport, N.Y. M.E., 1913, M.M.E., 1915, Ph.D., 1917, Cornell University.

Morris Liebmann Memorial Prize, 1926, for

> "researches and investigations into the more difficult element of wave transmission phenomena which have resulted in extensive and useful additions to existing knowledge."

President, 1927; Vice-President, 1926; Junior Past President, 1928–1929; Director, 1926–1929, 1937–1939. Committees: Admissions, *chairman, 1926*; 1939–1940; Awards, 1928–1931, 1938–1941; *chairman, 1942*; Constitution and Laws, 1929, 1937–1940; Finance, *chairman, 1926*; Meetings and Papers, 1929; Nominations, 1937, 1940–1943; *chairman, 1944*; Receiving Sets, 1927–1928; Standards, *chairman, 1925*; 1926, 1941.

GREGORY BREIT
(SM'45—F'45)

Professor, Department of Physics, Sterling Hall, University of Wisconsin, Madison 6, Wis. Born: July 14, 1898, Russia. A.B., 1918, A.M., 1920, Ph.D., 1921, Johns Hopkins University.

Fellow Award, 1945, for

> "pioneering in the experimental probing of the ionosphere and giving to the world the first publication of the experimental proof of the existence of the ionosphere; and for having initiated at an early date the pulse method of probing by reflection which is the basis of modern radar."

GEORGE H. BROWN
(A'30—VA'39—F'41)

Research Engineer, RCA Laboratories, Princeton, N.J. Born: October 14, 1908, North Milwaukee, Wis. B.S., 1930, M.S., 1931, Ph.D., 1933, E.E. (Professional), 1942, University of Wisconsin.

Fellow Award, 1941, for

> "studies and publications in the field of radio antennas."

Committees: Antennas, 1938, 1944–1946; Transmitters, 1944–1945.

GEOFFREY BUILDER
(A'32—F'41)

Consulting Engineer, 57 York St., Sydney, N.S.W., Australia. Born: June 21, 1906, Cue, Western Australia. B.Sc., University of Western Australia, 1928; Ph.D., King's College, University of London, 1933.

Fellow Award, 1941, for

> "contributions as an engineer, executive, and organizer and for his work in behalf of the radio engineering profession, notably in Australia."

Overseas Premium, Institution of Electrical Engineers (London), 1936.

CHARLES T. BURKE
(A'25—M'27—F'37)

Director of Planning, General Radio Company, 275 Massachusetts Ave., Cambridge 39, Mass. Born: August 4, 1902, Watertown, Mass. S.B., 1924, S.M., 1924, Massachusetts Institute of Technology.

Committees: Handbook, 1945–1946; Power Supply, 1928; Receiving Sets, 1927; Standards, 1941–1943.

CHARLES R. BURROWS
(A'24—M'38—SM'43—F'43)

Chairman, Committee on Propagation, National Defense Research Committee; Director, School of Electrical Engineering, Cornell University, Ithaca, N.Y. Born: June 21, 1902, Detroit, Mich. B.S.E.(E.E.), University of Michigan, 1924; A.M., Columbia University, 1927; E.E., University of Michigan, 1935; Ph.D., Columbia University, 1938.

Fellow Award, 1943, for

> "his contributions in the field of radio wave propagation, particularly for his investigations of propagation along the ground at ultra-high-frequencies."

Committees: Annual Review, 1943–1945; Circuits, 1945–1946; Radio Wave Propagation, 1939–1940, 1942; *chairman, 1943–1945*; Radio Wave Propagation and Utilization, 1945; Standards, 1943–1945; Symbols, 1940–1945; Wave Propagation, 1937–1941.

HENRI G. BUSIGNIES
(M'42—SM'43—F'45)

Director, Federal Telecommunication Laboratories, 67 Broad St., New York, N.Y. Born: December 29, 1905, Sceaux, Paris, France. E.E., Institut Normal Electro-technique, Paris, 1926.

Lakowsky Foundation for Radio-Compass Invention, Radio Club of France, 1926.

Fellow Award, 1945, for his

> "accomplishments in the field of radio direction finders, particularly pioneering work on instruments having automatic indicating features."

HAROLD H. BUTTNER
(M'27—SM'43—F'44)

Vice-President, Federal Telephone and Radio Corporation; Vice-President, International Telephone and Telegraph Corporation, 67 Broad St., New York 4, N.Y. Born: November 3, 1892, Port Costa, Calif. B.S.(E.E.), University of California, 1915.

Fellow Award, 1944, in

> "recognition of his direction of radio communication activities in the international field."

Committees: Electronics, 1940; Meetings and Papers, 1929; Standards, 1938–1939.

WALTER G. CADY
(A'14—F'27)

Professor of Physics, Scott Laboratory, Wesleyan University, Middletown, Conn. Born: December 10, 1874, Providence, R.I. Ph.B., 1895, M.A., 1896, Brown University; Ph.D., University of Berlin, 1900; D.Sc., Brown University, 1938.

Morris Liebmann Memorial Prize, 1928, for his

> "fundamental investigations in piezoelectric

phenomena and their application to radio technique."

Duddell Medal, Physical Society of London, 1936.

President, 1932; Junior Past President, 1933–1934; Manager, 1928; Director, 1929, 1932–1934; Editor, 1929. Committees: Admissions, *ex officio, 1929*; Annual Review, 1942–1945; Awards, 1928–1929, *chairman, 1930*; 1933; Bibliography, 1930–1931; Board of Editors, 1928, *chairman, 1929*; 1945; Meetings and Papers, 1928–1929; Nominations, 1930, 1933–1934, 1939; Papers, 1931; Piezoelectric Crystals, 1941, *chairman, 1942–1945*; Publicity, *ex officio, 1929*; Sections, 1928, *ex officio, 1929*; Standards, 1942–1945.

Connecticut Valley Section, *chairman*, 1927–1929.

ORESTES H. CALDWELL
(M'28—SM'43—F'44)

Vice-President and Treasurer, Caldwell-Clements, Inc.; Editor: *Electronic Industries* and *Radio and Television Retailing*, 480 Lexington Ave., New York 17, N.Y. Born: March 8, 1888, Lexington, Ky. B.S.(E.E.), 1908, E.E., 1931, D.E., 1933, Purdue University.

Fellow Award, 1944, for his

> "contribution in broadening the horizon of the engineer by his long-continued effort to increase the use of electronic principles in industrial operations."

Manager, 1932; Director, 1932–1935. Committees: Admissions, 1933; Annual Review, 1943; Constitution and Laws, 1932–1933, 1935; Nominations, 1934; Public Relations, *chairman, 1942*; 1943–1945; Publicity, 1931–1933, *chairman, 1934–1936*; 1937, 1939; Tellers, 1932–1933.

E. FINLEY CARTER
(A'23—F'36)

Director of Industrial Relations, Sylvania Electric Products, Inc., 500 ~~Fifth~~ Ave., New York 18, N.Y. Born: July 1, 1901, Elgin, Tex. B.S., Rice Institute, 1922.

Director, 1943–1945. Committees: Admissions, 1944; Constitution and Laws, 1945; Executive, 1944–1945.

E. LEON CHAFFEE
(M'17—F'21)

Rumford Professor of Physics and Gordon McKay Professor of Physics and Communication Engineering; Director of Cruft Laboratory; Director of Central Communications Research, Harvard University, Cambridge 38, Mass. S.B., Massachusetts Institute of Technology, 1907; A.M., 1908, Ph.D., 1913, Honorary S.D., 1944, Harvard University.

Longstreth Medal of Merit, Franklin Institute, 1912.

Vice-President, 1922; Director, 1922. Committees: Circuit Elements, 1928; Electronics, 1937–1945; Letter Symbols, *chairman, 1938*; Membership, 1925; Papers, 1918–1919; Papers Procurement, 1942–1943; Regular Papers, 1941; Sections, *ex officio, 1932–1935*; Standardization, 1927–1931; Symbols, 1940–1943; Vacuum Tubes, 1930–1931, 1933, 1945–1945.

Boston Section, *chairman*, 1932–1935.

Institute Representative: Harvard University, 1941–1945.

ADOLPH B. CHAMBERLAIN
(A'27—M'30—F'41)

Captain, U. S. Naval Reserve, Bureau of Ships, Navy Department 4, Constitution Ave., Washington 25, D.C.; formerly, Chief Engineer, Columbia Broadcasting System, Inc. Born: February 3, 1901, Franklin, Mass.

Fellow Award, 1941, for

> "engineering leadership in broadcast transmission and operation."

Director, 1941–1944. Committees: Admissions, *ex officio, 1929*; 1940–1941; Antennas, 1938; Awards, 1942; Broadcast, *alternate, 1932*; Frequency Modulation, 1941; New York Program, 1938–1939, *chairman, 1940*; 1941–1942; Papers, 1942; Publicity, *ex officio, 1929*; Regular Papers, 1941; Sections, 1928, *ex officio, 1929–1931*; Standardization: Subcommittee on the Establishment of Provisions for Safety of Operating and Other Personnel in Relation to Radio Transmitting Equipment, 1930–1931, Technical Committee No. 2, Radio Transmitters and Antennas, 1930–1931, 1933; Tellers, *chairman, 1942*; Transmitters and Antennas, 1936.

Sections: Buffalo-Niagara, *chairman*, 1930–1931; Rochester, *chairman*, 1928–1929.

HOWARD A. CHINN
(A'42—SM'45—F'45)

Chief Audio Engineer, Columbia Broadcasting System, Inc., 485 Madison Ave., New York 22, N.Y. Born: January 5, 1906, New York, N.Y. S. B., 1927, S.M., 1929, Massachusetts Institute of Technology.

Fellow Award, 1945, for his

> "contributions to improved broadcasting."

Committees: Admissions, 1945; Education, 1945; Membership, 1934, 1936–1938; Papers, 1935–1940, 1944–1945.

LEWIS W. CHUBB
(M'21—F'40)

Director, Westinghouse Research Laboratories, Forest Hills, Pittsburgh 21, Pa. Born: October 22, 1882, Fort Yates, N.D. M.E.(E.E.), Ohio State University, 1905; Sc.D., Allegheny College; Sc.D., University of Pittsburgh.

Committees: Membership, 1928; Power Supply, 1928; Standardization, 1921–1925, 1926.

Institute Representative: American Engineering

Standards Committee (now American Standards Association) Technical Committee, *chairman*, Power Supply and Outside Plant, *1926*.

JAMES K. CLAPP
(A'24—M'28—F'33)

Engineer, 275 Massachusetts Ave., Cambridge 39, Mass. Born: December 30, 1897, Denver, Colo. S.B., 1923, S.M., 1926, Massachusetts Institute of Technology.

Committees: Papers, 1931–1945; Piezoelectric Crystals, 1941–1945; Standards, 1934–1935.

ANDRE G. CLAVIER
(M'30—F'39)

Assistant Director of Research, Laboratoire Central des Telecommunicordions, 46 Ave. de Bretuil, Paris, France.

LEWIS M. CLEMENT
(A'14—M'17—F'26)

Vice-President, Research and Engineering, Crosley Radio Corp., Cincinnati 25, Ohio. Born: January 25, 1892, Oakland, Calif. B.S. (E.E.), University of California, 1914.

Director, 1945. Committees: Board of Editors, 1941–1945; Electro-Acoustic Devices, 1930–1931; Meetings and Papers, 1929; Receiving Sets, 1927–1928; Regular Papers, 1941; Sections, *ex officio*, *1945*; Standardization: 1930–1931.

Cincinnati Section, *chairman*, 1945.

IVAN S. COGGESHALL
(A'26—M'29—F'42)

General Cable Supervisor, Western Union Telegraph Company, 60 Hudson Street, New York 13, N.Y.; Lieutenant Commander, U.S. Naval Reserve. Born: September 30, 1896, Newport, R. I.

Fellow Award, 1942, for his

> "services to the welfare of the Institute and the engineering profession."

Director, 1941–1944. Committees: Admissions, 1934–1935, 1941–1942; Annual Review, 1944–1945; Constitution and Laws, 1942, 1945; Executive, 1942; Membership, 1928, *chairman*, *1929–1930*; 1931, *chairman*, *1934–1935*; 1936–1940, *chairman*, *1941*; New York Program, 1938, *chairman*, *1939*; 1940; Nominations, 1944; Papers, 1942–1945; Papers Procurement, *group chairman*, *1945*; Public Relations, *chairman*, *1943–1945*; Sections, 1933–1935, 1938–1942; Standards, 1945–1946.

LOUIS COHEN
(F'15)

Consulting Engineer, 5603 Roosevelt, Bethesda, Md. Born: December 16, 1876, Russia. B.Sc., Armour Institute of Technology, 1901; University of Chicago, 1901–1902; Ph.D., Columbia University, 1905.

Committees: Standardization, 1915.

EDWIN H. COLPITTS
(A'14—F'26)

Director, The Engineering Foundation, 29 W. 39 St., New York 18, N.Y.; Chief, Section 6.1, National Defense Research Committee. Born: January 19, 1872, Point de Bute, N.B., Canada. A.B., Mt. Allison University, 1893; A.B., 1896, A.M., 1897, Harvard University; Honorary LL. D., Mt. Allison University, 1926.

Order of Sacred Treasure, Empire of Japan, 1937.

Manager, 1921–1923.

ELLSWORTH D. COOK
(A'21—VA'39—F'41)

Division Engineer, High-Frequency Division, General Engineering and Consulting Laboratory, General Electric Company, Schenectady, N.Y. Born: June 17, 1898, Schenectady, N.Y. B.S. (E.E.), 1920, M.S. (E.E.), 1921, Ph.D. (E.E.), 1923, Union College.

Fellow Award, 1941, for

> "contributions to a wide range of important radio engineering projects."

Committees: Admissions, 1944–1945; Electro-Acoustic Devices, *chairman*, *1933*. Membership, 1936–1939, *chairman*, *1940*; 1942–1943; *chairman*, *1944–1945*; Sections, *ex officio*, *1934*; 1935, 1937; *chairman*, *1938–1939*; 1940–1945; Standards, 1932–1933.

Philadelphia Section, *chairman*, 1934–1935.

Institute Representative: American Standards Association Sectional Committee on Acoustical Measurements and Terminology, 1936–1937, 1939–1945.

ADOLFO T. COSENTINO
(A'37—VA'39—F'40)

Senior Communications Representative, Pan American Grace Airways, Inc., Diagonal Iroque, Saenz Pena F88, Buenos Aires, Argentina. Born: November 18, 1898, Buenos Aires, Argentina. Attended National School in Buenos Aires.

Vice-President, 1941; Director, 1941. Committees: Sections, *ex officio*, *1940–1941*.

Buenos Aires Section, *chairman*, 1940–1941.

TUNIS A. M. CRAVEN
(F'29)

Vice-President, Iowa Broadcasting Company, 1627 K St., N.W., Washington, D.C. Born: January 31, 1893, Philadelphia, Pa. Graduate, United States Naval Academy, 1913.

Director, 1937. Committees: Broadcast, 1934; Meetings and Papers, 1930; Papers, 1931–1941; Radio Transmitters and Antennas, 1930–1931; Standardization, 1929–1931; Subcommittee on Establishment of Provisions for Safety of Operating and Other Personnel in Relation to Radio Transmitting Equipment, 1930–1931; *chairman*, Subcommittee on Nomenclature, Symbols and Definitions, *1930–1931*.

MURRAY G. CROSBY
(A'25—M'38—SM'43—F'43)

Consulting Engineer, Paul Godley Company, Upper Montclair, N.J. Born: September 17, 1903, Elroy, Wis. B.S., 1927, E.E., 1943, University of Wisconsin.

Fellow Award, 1943, for his

> "contributions to the development of high-frequency radio communications, including a careful study of frequency modulation."

Committees: Admissions, 1945; Frequency Modulation, 1941–1945; Papers, 1944–1945; Papers Procurement, *group chairman, 1945*.

FULTON CUTTING
(M'15—F'21)

Twenty Pine St., New York, N.Y. Formerly, Operational Research Section, Office Chief Signal Officer. Born: December 27, 1886, New York, N.Y.

President, 1922; Vice-President, 1921; Manager, 1920; Director, 1921–1922. Committees: Education, 1944; Investments, 1944–1945.

LEE de FOREST
(M'14—F'18)

Director of Research, Lee de Forest Laboratories, 5106 Wilshire Blvd., Los Angeles 36, Calif. Born: August 26, 1873, Council Bluffs, Iowa. Ph.B., 1896, Ph.D., 1899, Yale University; Sc.D., Syracuse University, 1919; D.Sc., Yale University, 1926; D. Eng., Lewis Institute, 1937.

Medal of Honor, 1922, for his

> "major contributions to the communications arts and sciences, as particularly exemplified by his invention of that outstandingly significant device: the three-electrode vacuum tube, and his work in the fields of radio-telephonic transmission and reception."

President, Society of Wireless Telegraph Engineers, 1909–1910.

President, 1930; Junior Past President, 1931–1932; Director, 1930. Committees: Specifications for Steamship Radio Equipment, 1914; Wave Length Regulation, 1916.

JOHN HOWARD DELLINGER
(F'23)

Chief, Interservice Radio Propagation Laboratory; Chief, Radio Section, National Bureau of Standards, Washington, D.C. Born: July 3, 1886, Cleveland, Ohio. A.B., George Washington University, 1908; Ph.D., Princeton University, 1913; D.Sc., George Washington University, 1932.

Medal of Honor, 1938, for his

> "contributions to the development of radio measurements and standards, his researches and discoveries of the relation between radio-wave propagation and other natural phenomena, and his leadership in international conferences contributing to world-wide co-operation in telecommunications."

President, 1925; Junior Past President, 1926–1927; Vice-President, 1924; Director, 1924–1925; Manager, 1928–1931. Committees: Annual Review, 1938–1943; Awards, 1934, 1936; Bibliography, 1930, *chairman, 1931*; 1932, 1934; Meetings and Papers, 1926, *chairman, 1928*; Nominations, 1928, *chairman, 1931*; 1935; Radio Wave Propagation, *chairman, 1942;* 1943–1945; Receiving Sets, *chairman, 1927;* Revision of the Constitution, *chairman, 1926–1927*; Sections, *ex officio, 1932–1933*; Standards, 1920–1928, *chairman, 1929–1931*; 1932–1941, 1943; Symbols, 1940–1941, 1943–1945; Use of the Transmission Unit, 1928; Wave Propagation, *chairman, 1937–1941*.

Washington Section, *chairman*, 1932–1933.

Institute Representative: American Documentation Institute, 1944–1945; Council of the American Association for the Advancement of Science, 1926–1929; Engineering Index, 1931–1932; American Standards Association Sectional Committee on Electric and Magnetic Magnitudes and Units, 1936–1937, 1939–1945.

EDMOND M. DELORAINE
(M'25—F'41)

President, International Telecommunication Laboratories, Inc., 67 Broad St., New York 4, N.Y. Born: May 16, 1898, Clichy, Seine, France. B.S., L'Ecole de Physique et Chimie Branch of Paris University, 1920.

Committees: Board of Editors, 1944; Membership, 1927.

HARRY DIAMOND
(A'26—M'30—SM'43—F'43)

Chief, Ordnance Development Division, National Bureau of Standards, Washington, D.C. Born: February 12, 1900, Quincy, Mass. B.S., Massachusetts Institute of Technology, 1922; M.S., Lehigh University, 1925.

Fellow Award, 1943, for his

> "contributions to the development and application of radio aids in air navigation and meteorology."

Engineering Award, Washington Academy of Sciences, 1940.

Committees: Antennas, 1938, 1944–1945; Papers Procurement, *group chairman, 1944–1945*; Radio Receivers, 1936–1945; Standardization, Technical Committee No. 1, Radio Receivers and Parts, 1930–1931; Radio Receivers, 1938; Receiving Sets, 1927–1928; Subcommittee on Aircraft Receivers, 1930–1931; Transmitters and Antennas, 1936–1944; Transmitters, 1944–1945.

WILLIAM F. DIEHL
(A'19—M'29—F'36)

Manager, Engineering and Production, Airplane and Marine Instruments, Inc., Clearfield, Pa. Born: December 18, 1896, New York, N.Y.

Committees: Sections, *ex officio, 1933–1934*; Radio Transmitters and Antennas, 1930–1931; Transmitters and Antennas, 1933.

Philadelphia Section, *chairman*, 1933–1934.

WILLIAM H. DOHERTY
(A'29—M'36—SM'43—F'44)

Member, Technical Staff, Bell Telephone Laboratories, Inc., Whippany, N.J. Born: August 21, 1907, Cambridge, Mass. S.B., 1927, S.M., 1929, Harvard University.

Morris Liebmann Memorial Prize, 1937, for his

> "improvement in the efficiency of radio-frequency power amplifiers."

Fellow Award, 1944, for his

> "contributions to the development of radio transmitting equipment."

Committees: Membership, 1943–1945.

HERBERT G. DORSEY
(M'19—F'34)

Chief, Research Section, Division of Coastal Surveys, United States Coast and Geodetic Survey, Washington 25, D.C. B.S., 1897, Sc.D., 1937, Denison University; Ph.D., Cornell University, 1908.

First Annual Award, Washington Society of Engineers, 1941.

Committees: Membership, *ex officio, 1930–1931*; Sections, *ex officio, 1933.*

Washington Section, *secretary*, 1930–1932, *chairman*, 1933.

JENNINGS B. DOW
(M'26—F'42)

Commodore, U. S. Navy, Director of Electronics, Bureau of Ships, Navy Dept., Washington, D.C. Born: January 2, 1897, Bowling Green, Ohio. B.S., United States Naval Academy, 1919; M.S., Harvard University, 1926.

Fellow Award, 1942, for

> "engineering accomplishments in the development and procurement of radio equipment for the United States Navy."

Committees: Board of Editors, 1944–1945; Electronics, 1940–1945; Papers, 1941–1944.

WILLIAM DUBILIER
(A'14—M'18—F'29)

Executive and Technical Director, 10 E. 40 St., New York 16, N.Y. Born: July 25, 1888, New York, N.Y. Cooper Institute, New York, N.Y.

LEE A. Du BRIDGE
(A'35—VA'39—F'42)

Director, Massachusetts Institute of Technology Radiation Laboratory, Cambridge, Mass.; Professor of Physics, University of Rochester (on leave). Born: September 21, 1901, Terre Haute, Ind. B.A., Cornell College, Iowa, 1922; M.A., 1924, Ph.D., 1926, University of Wisconsin; Honorary Sc.D., Cornell College, Iowa, 1940.

Fellow Award, 1942, for

> "engineering and administrative leadership in the development and application of new radio techniques."

Committees: Awards, 1945; Electronics, 1943–1944; Sections, *ex officio, 1936–1938.*

Rochester Section, *chairman*, 1936–1938.

ALLEN B. DuMONT
(M'30—F'31)

President, Allen B. DuMont Laboratories, Inc., Passaic, N.J. Born: January 29, 1901, Brooklyn, N.Y. E.E., 1924, D. Eng., 1944, Rensselaer Polytechnic Institute.

Marconi Medal of Achievement, Veteran Wireless Operators Association, 1945; Technical Pioneering in Television, Television Broadcasters Association, 1944.

Committees: Cathode-Ray and Television Tubes, 1938; Electron-Beam Tubes, 1938; Standardization, 1930–1931; Standards, 1932–1933; Television, 1940–1945.

GANO DUNN
(F'15)

President, The J. G. White Engineering Corporation, 80 Broad St., New York 4, N.Y.; President, Cooper Union for the Advancement of Science and Art, New York, N.Y. B.S., 1889, M.S., 1897, College of the City of New York; E.E., 1891, Honorary M.S., 1914, D.Sc., 1938, Columbia University; Honorary D.Sc., Rutgers University, 1938; Honorary D.Sc., New York University, 1941; Honorary D.Eng., Lehigh University, 1942.

Townsend Harris Medal, College of the City of New York, 1933; Edison Medal, 1937; Hoover Medal, 1939; Egleston Medal, Columbia University, 1939; Modern Pioneer Award, National Association of Manufacturers, 1940.

MELVILLE EASTHAM
(A'13—M'13—F'25)

Chief Engineer, General Radio Company, Cambridge, Mass. Born: June 26, 1885, Oregon City, Ore.

Medal of Honor, 1937, for his,

> "pioneering work in the field of radio measurements, his constructive influence on laboratory practice in communication engineering, and his unfailing support of the aims and ideals of the Institute."

Treasurer, 1927–1940; Manager, 1922–1932; Director, 1932–1941; Committees: Admissions, *ex officio, 1927, 1929–1931*; 1937–1939, 1941–1942; Awards, *chairman, 1929*; 1931, 1935, 1939, *chairman, 1941*; 1942; Bibliography, 1930–1931, *chairman, 1932, 1934*; Circuit Elements, 1928; Constitution and Laws, 1930–1931, 1933; Education, 1944–1945; Membership, *ex officio, 1927, 1929–1931*; Nominations, *chairman, 1929*, 1930; 1932, *chairman, 1935*; 1936, 1938–1939, 1941; Papers, 1915–1919; Revision of the Constitution, 1925; Sections, 1925; Standardization, 1925, 1927–1928, Subcommittee on Electro-Acoustic Devices, 1927–1928, 1930–1931; Standards, 1936–1938; Wave Length Regulation, 1916; Committee for Organization of Boston Section, *secretary, 1914.*

Boston Section, *secretary-treasurer*, 1916–1928, *secretary*, 1929–1932.

Institute Representative: Engineering Index National Committee, 1936–1937; 1939–1943; Radio Broadcasting Committee of the American Engineering Council, 1930–1932, 1936–1937, 1939–1940; U. S. National Committee, Advisers on Electrical Measuring Instruments (International Electrotechnical Committee), 1931–1932, 1936–1937, 1939–1942; American Engineering Standards Committee (now American Standards Association) Technical Committee on Transmitting and Receiving Sets and Installations, 1927–1928; ASA Technical Committee on Transmitting and Receiving Sets and Installations, 1929–1930.

AUSTIN V. EASTMAN

(A'23—M'32—F'41)

Professor of Electrical Engineering and Head of Department of Electrical Engineering, University of Washington, Seattle 5, Wash. Born: May 16, 1902, Seattle, Wash. B.S. (E.E.), 1922, M.S. (E.E.), 1929, University of Washington.

Committees: Admissions, *ex officio, 1929–1931*; Membership, 1942–1945; Papers Procurement, 1942–1943; Publicity, *ex officio, 1929*; Regular Papers, 1941; Sections, *ex officio, 1929–1931.*

Seattle Section, *chairman*, 1929–1931.

Institute Representative: University of Washington, 1941–1945.

THOMAS L. ECKERSLEY

(F'44)

Research Radio Engineer, Baddow Research Laboratories, Marconi Wireless Telegraph Co., Ltd., Chelmsford, Essex, England. Born: December 27, 1886, London, England. B.Sc., University College, England; B.A., Cambridge.

Fellow Award, 1944, for his

> "outstanding contribution to the theory and practice of radio-wave-propagation research. Both his approach to the problem from the standpoint of practical communications and his invention of mathematical tools useful in the computation of radiated fields are achievements of lasting value acclaimed by the whole radio world, and form a monument of which he may be justly proud."

Committees: Wave Propagation, 1937–1939.

CORNELIUS D. EHRET

(F'16)

Land Title Building, Philadelphia, Pa. Born: January 28, 1874, Erie, Pa. E.E., Cornell University, 1896; LL.B., National Law School, 1901.

CYRIL F. ELWELL

(M'14—F'18)

31 Felday Rd., London S.E.3, England. Born: August 20, 1884, Melbourne, Victoria, Australia. A.B., 1907, E.E., 1908, Stanford University.

Committees: Increase of Membership, 1913–1914.

CARL R. ENGLUND

(A'17—F'28)

Retired. Formerly, Member of the Technical Staff, Bell Telephone Laboratories. Born: November 13, 1884, Sioux City, Iowa. B.S., University of South Dakota, 1909.

Committees: Fundamental Units and Measurements, 1933.

ELMER W. ENGSTROM

(A'25—M'38—F'40)

Research Director, RCA Laboratories, Princeton, N.J. Born: August 25, 1901, Minneapolis, Minnesota. B.S.(E.E.), University of Minnesota, 1923.

Committees: Awards, 1945; Board of Editors, 1940–1945; Public Relations, 1940; Regular Papers, 1941; Television and Facsimile, 1936–1938; Television, 1939–1940.

LLOYD ESPENSCHIED

(M'13—F'24)

Consultant, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: April 27, 1889, St. Louis, Mo. Pratt Institute, 1909.

Medal of Honor, 1940, for his

> "accomplishments as an engineer, as an inventor, as a pioneer in the development of radiotelephony, and for his effective contributions to the progress of international radio co-ordination."

Medal Award, Television Broadcasters Association, 1944.

Manager, 1913, 1915–1926, 1931. Committees: Admissions, 1942–1945; Awards, 1919; Editing, 1914; Increase of Membership, 1917–1919; Radio Receivers, 1933; Radio Telephone and Receiver Terminology, *chairman, 1924–1925*; Revision of the Constitution, 1925; Sections, *ex officio, 1944–1945*; Standardization, 1924–1925; Wave Length Regulation, 1916, 1919.

New York Section, *chairman*, 1944–1945.

Institute Representative: National Advisory Council on Radio in Education, 1932, 1936–1937, 1939–1940; Committee on Engineering Developments, 1941–1943; *chairman*, American Engineering Standards Committee (now American Standards Association) Technical Committee, Electro-Acoustic Devices, *1926*.

PORTER H. EVANS
(M'23—F'31)

Engineer, Western Electric Company, Kearny, N.J. Born: January 11, 1891, Erie, Pa. B.S.(E.E.), 1914, M.S., 1920, University of Michigan.

Committees: Standardization, 1930–1931.

WALTER C. EVANS
(M'36—SM'43—F'45)

Vice-President, Westinghouse Electric Corporation, Baltimore, Maryland. Born: August 27, 1898, Columbus, Ohio.

Fellow Award, 1945, in

> "recognition of his past contributions to radio and his present active participation in the affairs of the Institute."

WILLIAM L. EVERITT
(A'25—M'29—F'38)

Professor and Head of Department of Electrical Engineering, University of Illinois, Urbana, Ill. Born: April 14, 1900, Baltimore, Md. E.E., Cornell University, 1922; M.S., 1926, University of Michigan; Ph.D., Ohio State University, 1933.

President, 1945; Director, 1942–1945. Committees: Awards, 1943; *chairman, 1944*; Board of Editors, 1941–1945; Circuits, 1944–1945; Education, *chairman, 1944*; Executive, *chairman, 1945*; Frequency Modulation, 1941–1945; Investments, 1945; Membership, 1942–1943; Nominations, 1942; Papers, 1941–1942; Papers Procurement, *vice-chairman, 1943–1944*; Regular Papers, *vice-chairman, 1941*.

Institute Representative: Ohio State University, 1941–1942.

PHILO T. FARNSWORTH
(A'28—M'34—F'39)

Director and Consultant, Farnsworth Television and Radio Corporation, Box 147, Fryeburg, Maine. Born: August 19, 1906, Beaver, Utah.

Morris Liebmann Memorial Prize, 1941, for his

> "contributions in the field of applied electronics."

Honorable Mention Citation for Outstanding Young Electrical Engineer, Eta Kappa Nu, 1937; Distinguished Alumni Award, Brigham Young University, 1937; Durward Howes' list of ten most distinguished young men for "America's Young Men," 1940.

Committees: Cathode-Ray and Television Tubes, 1938; High-Frequency Tubes, 1938; Television and Facsimile, 1936–1938; Television, 1939–1941.

CLAIR L. FARRAND
(A'14—M'23—F'31)

President, Farrand Optical Company, Inc., 4401 Bronx Blvd., New York 66, N.Y. Born: October 22, 1895, Newark, N.J.

JOHN F. FARRINGTON
(A'19—M'29—F'31)

Radio and Electronic Engineer, Pine Cove, R.F.D. 1, Laconia, N.H. and Wartime Consultant to the Raytheon Manufacturing Company, Waltham, Mass. Born: January 11, 1895, New York, N.Y. Licensed Professional Engineer, New York State Education Department, 1931.

Committees: Admissions, 1938–1939; New York Programs, 1939.

CARL B. H. FELDMAN
(A'26—VA'39—F'43)

Transmission Research Engineer, Bell Telephone Laboratories, Inc., Murray Hill, N.J. Born: March 26, 1902, St. Peter, Minn. B.S. (E.E.), 1926, M.S. (E.E.), 1928, University of Minnesota.

Fellow Award, 1943, for his

> "investigations of the characteristics of radio waves and his developments in antennas and receiving systems."

ERNEST T. FISK
(M'15—F'26)

Managing Director, Electric and Musical Industries, Ltd., Blyth Rd., Hayes, Middlesex, England. Born: August 8, 1886, Sunbury-on-Thames, Middlesex, England.

Honorary Member, Institution of Electrical Engineers, London.

Vice-President, 1938; Director, 1938.

HAROLD T. FRIIS
(A'18—M'26—F'29)

Radio Research Engineer, Bell Telephone Laboratories, Inc., Box 107, Red Bank, N.J. Born: February 22, 1893, Naestved, Denmark. E.E., 1916, Dr. Eng., 1938, Royal Technical College, Copenhagen.

Morris Liebmann Memorial Prize, 1939, for his

> "investigations in radio transmission including the development of methods of measuring signals and noise and the creation of a receiving system for mitigating selective fading and noise interference."

Director, 1941–1943. Committees: Admissions, 1941; Papers, 1941.

LEONARD F. FULLER
(A'14—M'14—F'25)

Chief Consulting Engineer, Joshua Hendy Iron Works, Sunnyvale, Calif. Born: August 21, 1890, Portland, Ore. M.E., Cornell University, 1912; Ph.D., Stanford University, 1919.

Morris Liebmann Memorial Prize, 1919, for his "contributions to long-distance radio communication."

Manager, 1928. Committees: Admissions, 1928–1929; Sections, 1926–1928; Specifications for Steamship Radio Equipment, 1914; Standardization, 1916–1919, Technical Committee No. 2, Radio Transmitters and Antennas, 1930–1931, Subcommittee on the Establishment of Provisions for Safety of Operating and Other Personnel in Relation to Radio Transmitting Equipment, 1930–1931, Subcommittee on Methods of Testing Apparatus, Equipment, Devices, and Materials Used in Radio Transmitters and Antennas, 1930–1931; Transmitters and Antennas, 1930–1931; Wave Length Regulation, 1916, 1919.

San Francisco Section, *chairman*, 1928–1929.

ARCHIBALD J. GILL
(M'20—F'40)

Deputy Engineer-in-Chief, General Post Office, Alder House, London, E.C. 1, England. Born: May 13, 1889, Stoke-Sub-Hamdon, Somerset, England. B.Sc. (Engineering), University of London, 1909.

GLENN D. GILLETT
(A'22—M'27—F'34)

Consulting Radio Engineer, Wartime Operations Analyst, National Press Building, Washington, D.C. Born: April 14, 1898, Sterling, Colo. A.B., Harvard College, 1919; S.B. (E.E.), Harvard Engineering School, 1921.

Committees: Broadcast, 1935, 1937; Radio Wave Propagation, 1943–1945; Wave Propagation, 1937–1941, 1943–1944.

PETER C. GOLDMARK
(A'36—M'38—F'42)

Director of Engineering Research and Development, Columbia Broadcasting System, Inc., New York 22, N.Y. Born: December 2, 1906, Budapest, Hungary. B.Sc., 1930, Ph.D., 1931, Vienna Technical College, Vienna, Austria.

Fellow Award, 1942, for his "contributions to the development of practical color television."

Morris Liebmann Memorial Prize, 1945, for his "contributions to the development of television systems, particularly in the field of color."

Technical Progress Medal, Television Broadcasters Association, 1944.

Committees: Board of Editors, 1941–1945; Television and Facsimile, 1938; Television, 1939–1945.

ALFRED N. GOLDSMITH
(M'12—F'15)

Consulting Engineer, 597 Fifth Ave., New York 17, N.Y. Born: September 15, 1889, New York, N.Y. B.S., College of the City of New York, 1907; Ph.D., Columbia University, 1911; Sc.D., Lawrence College, 1935.

Medal of Honor, 1941, for his "contributions to radio research, engineering, and commercial development, his leadership in standardization, and his unceasing devotion to the establishment and upbuilding of the Institute and its PROCEEDINGS."

Modern Pioneer Award, National Association of Manufacturers, 1940; Townsend Harris Medal, College of the City of New York, 1942; Medal Award, Television Broadcasters Association, 1945; and other awards.

President, 1928; Junior Past President, 1929–1930; Secretary, 1918–1927; Director, 1913–1945; Editor, 1913–1945. Committees: Admissions, 1925; Awards, *chairman, 1919*; 1930–1933, 1935, 1938; Bibliography, 1934; Board of Editors, *chairman, 1928–1934*; Circuit Elements, 1928; Constitution and Laws, *chairman, 1936–1940*; Electro-Visual Devices, 1933; Executive, 1942–1945; Finance, 1914–1915; Meetings and Papers, 1925–1926; Membership Solicitation Policy, 1945; Nominations, 1929, *chairman, 1930*; 1931, 1936, *chairman, 1940*; Papers, *chairman, 1913–1919*; Special Papers, 1941; Standardization, *secretary, 1912–1913; chairman, 1915*; 1916–1936; Television and Facsimile, 1936–1938; Tellers, *chairman, 1932*; Wave Length Regulation, 1916, 1919.

Institute Representative: National Advisory Council on Radio in Education, 1932, 1936–1937, 1939–1940; Committee on Engineering Developments, 1941–1943; National Television System Committee, 1941–1943, Panel 2, 1942–1943; Executive Committee of the Sectional Committee on Radio, American Engineering Standards Committee (now American Standards Association) *secretary, 1926*; ASA Sectional Committee on Radio, *chairman, 1936–1937, 1939–1945*; ASA Standards Council, 1931–1932, 1936–1937, 1939–1945; ASA War Standards Committee on Radio, 1943–1945; Subcommittee on Insulating Material Specifications for the Military Services, *chairman, 1943–1945*.

VIRGIL M. GRAHAM
(A'24—M'27—F'35)

Plant Manager, Industrial Apparatus Plant, Sylvania Electric Products, Inc., 1221 W. Third St., Williamsport 19, Pa. Born: January 22, 1902, Rochester, N.Y. University of Rochester.

Director, 1935–1941. Committees: Awards, 1940; Constitution and Laws, 1940, 1944; Meetings and Papers, 1928–1929; Membership, *ex officio, 1927*; Nominations, 1940; Papers Procurement, 1942–1943; Power Supply, 1928; Publicity, 1935–1936; Public Relations, *chairman, 1940*; Radio Receivers, 1930–1931, 1933, 1936–1940, Definitions, 1938; Receiving Sets, 1927–1928; Regular Papers, 1941; Sections, 1930–1934, *chairman, 1936–1937*; 1938–1945; Standardization, Technical Committee No. 1, Radio Receivers and Parts, *chairman*, Subcommittee on Aircraft Receivers, *chairman, 1930–1931*, Standards, 1930–1931, 1933, 1935–1943.

Rochester Section, *chairman*, 1926–1927.

Institute Representative: American Standards Association, Sectional Committee on National Electrical Safety Code, Subcommittee on Article 810, Radio Broadcast Reception Equipment, *Alternate, 1937, 1939–1945.*

V. FORD GREAVES
(F'28)

Supervisor, Western Area, Radio Intelligence Division, Engineering Department, Federal Communications Commission, 328 Custom House, San Francisco 26, Calif. Lieutenant-Commander, U.S. Naval Reserve (retired). Born: February 14, 1884, Indianapolis, Ind. Harvard University, 1912.

Committees: Increase of Membership, 1913–1914; Publicity, 1914; Radio Receivers and Parts, 1930–1931; Radio Receivers, 1933.

San Francisco Section, *secretary-treasurer*, 1917–1919.

ALFRED L. GREEN
(A'28—F'38)

Engineer, Amalgamated Wireless, Australasia, Ltd., 554 Parramatta Rd., Ashfield, N.S.W., Australia. Born: February 3, 1905, London, England. B.Sc., King's College, University of London, 1926; M.Sc., King's College, University of London, 1929; Ph.D., University of London, 1934.

GILBERT E. GUSTAFSON
(A'27—M'38—F'40)

Vice-President in Charge of Engineering, Zenith Radio Corporation, 6001 Dickens Ave., Chicago, Ill. Born: November 15, 1905, Rock Island, Ill.

Director, 1943. Committees: Admissions, 1943; Awards, 1942; Board of Editors, 1944.

RAYMOND F. GUY
(A'25—M'31—F'39)

Radio Facilities Engineer, National Broadcasting Company, 30 Rockefeller Plaza, New York 20, N.Y. Born: July 4, 1899, Hartford, Conn. I.E.E., Pratt Institute, 1921.

Director, 1944–1945. Committees: Annual Review, 1943–1945; Antennas, *chairman, 1938*; Broadcasting, 1929–1932; Constitution and Laws, *chairman, 1945*; Education, 1945; Frequency Modulation, 1942–1945; Standards, 1942–1946; Transmitters and Antennas, 1933, 1936–1942; *chairman, 1943–1945.*

RALPH A. HACKBUSCH
(A'26—M'30—F'37)

Vice-President and Managing Director, Stromberg-Carlson Company, 211 Geary Ave., Toronto 4, Ont., Canada. Born: September 18, 1900, Hamilton, Ont., Canada.

Vice-President, 1944. Director, 1938, 1944–1945. Committees: Admissions, *ex officio, 1930–1931*; 1940; Membership, *ex officio, 1930–1931*; Public Relations, 1940; Sections, *ex officio, 1932–1933*; 1936–1937.

Toronto Section, *secretary*, 1930–1931; *chairman*, 1932–1933.

HENRY E. HALLBORG
(F'45)

Research Engineer, RCA Laboratories, Inc., 66 Broad St., New York, N.Y. Born: April, 1884, Stockholm, Sweden. B.Sc. in E.E., Brown University, 1907.

Committees: Constitution and Laws, 1928–1932; Radio Transmitters and Antennas, 1930–1931; Standardization, 1930–1931; Subcommittee on the Establishment of Provisions for Safety of Operating and other Personnel in Relation to Radio Transmitting Equipment, *chairman, 1930–1931*; Subcommittee on Methods of Testing Apparatus, Equipment, Devices, and Materials Used in Radio Transmitters and Antennas, 1930–1931; Transmitters and Antennas, 1933.

CLARENCE W. HANSELL
(A'26—M'29—SM'43—F'45)

Research Division Head, Radio Transmission, RCA Laboratories, Inc., Rocky Point, L.I., N.Y. Born: January 20, 1898, Medaryville, Ind. B.S. (E.E.), Purdue University, 1919.

Joint Modern Pioneer Award, National Association of Manufacturers, 1940.

Fellow Award, 1945, for his

> "pioneer work in the development and application of equipment for the ever higher frequencies employed for radio communication."

OSCAR B. HANSON
(A'18—M'27—F'41)

Vice-President and Chief Engineer, National Broadcasting Company, 30 Rockefeller Plaza, New York 20, N.Y. Born: February 11, 1894, Huddersfield, Yorkshire, England.

Director, 1938–1943. Committees: Meetings and Papers, 1929; Nominations, 1944–1945; Papers, 1942–1945; Papers Procurement, 1942–1943; Public Relations, 1940–1945; Regular Papers, 1941; Standardization, 1929; Tellers, *chairman, 1941.*

DANIEL E. HARNETT
(A'25—M'35—F'42)

Engineer, Hazeltine Corporation, Grand Central Parkway, Little Neck, L.I., N.Y. Born: July 20, 1899, Elmira, N.Y. A.B., 1922, E.E., 1925, Columbia University.

Fellow Award, 1942, in

> "recognition of his outstanding direction of radio engineering activities."

Committees: Admissions, 1941–1943; Awards, 1945; New York Program, 1940; Radio Receivers, 1936–1941; Standardization: Technical Committee No. 3, Vacuum Tubes, 1930–1931.

RALPH V. L. HARTLEY
(M'19—F'28)

Research Consultant, Bell Telephone Laboratories, Inc., Murray Hill, N.J. Born: November 30, 1888, Spruce, Nev. A.B., University of Utah, 1909; B.A., 1912, B.Sc., 1913, Oxford University.

Medal of Honor, 1946, for his

> "early work on oscillating circuits employing triode tubes and likewise for his early recognition and clear exposition of the fundamental relationship between the total amount of information which may be transmitted over a transmission system of limited bandwidth and the time required."

Committees: Sections, 1945.

LESLIE W. HAYES
(F'38)

O.B.E., M.I.E.E., Broadcasting House, Portland Place, London, W. 1, England. Born: May 31, 1896, London, England.

ALAN HAZELTINE
(A'16—M'18—F'21)

Consulting Engineer, Little Neck, L.I., N.Y. Born: August 7, 1886, Morristown, N.J. M.E., 1906, Honorary Sc.D., 1933, Stevens Institute of Technology; A.M., Columbia University, 1938.

Armstrong Medal, Radio Club of America, 1937.

President, 1936; Manager, 1923–1928; Director, 1936, 1939; Past-President Director, 1937–1938. Committees: Admissions, 1925–1927; Awards, *chairman, 1937*; 1938; Education, 1945; Meetings and Papers, 1925, 1927; New York Program, 1935; Standardization, 1925–1927.

Institute representative: Radio Advisory Committee, Bureau of Standards, Department of Commerce, 1926–1927; American Engineering Standards Committee (now American Standards Association) Sectional Committee on Preferred Numbers, 1927; Sectional Committee on Radio, 1927–1928.

RALPH M. HEINTZ
(A'21—M'27—F'30)

Vice-President and Secretary, ~~Jack and Heintz, Cleveland, Ohio.~~ Born: April 20, 1892, St. Louis, Mo. A.B., Stanford University, 1920.

Committees: Admissions: *ex officio, 1931*; Membership, 1938–1940; New York Program, 1938; Sections, *ex officio, 1931–1932*; 1938–1940.

San Francisco Section, *chairman*, 1931–1932.

RAYMOND A. HEISING
(A'20—F'23)

Patent Engineer, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: August 10, 1888, Albert Lea, Minn. E.E., University of North Dakota, 1912; M.S., University of Wisconsin, 1914.

Morris Liebmann Memorial Prize, 1921, in

> "recognition of the publication of his basic work in the field of the signal modulation of an oscillator output, and in particular of his invention and development of constant-current modulation as first applied to radiotelephony."

President, 1939; Treasurer, 1943–1945; Manager, 1927–1931; Director, 1933–1935, 1939–1941, 1943–1945.

Committees: Admissions, 1927; *chairman, 1928–1930*; *vice-chairman, 1931*; 1933, 1935–1938; Constitution and Laws, 1930–1934, 1941–1942; *chairman, 1943–1944*; 1945; Executive, *vice-chairman, 1943–1945*; Investments, *chairman, 1944–1945*; Meetings and Papers, 1926; Membership Solicitation Policy, 1945; New York Program, 1933, 1935–1937; Nominations, 1933, *chairman, 1941*; Preparedness, 1941; Sections, *chairman, 1941–1945*; Standardization, 1925.

KEITH HENNEY
(A'18—M'26—SM'43—F'43)

Editor-in-Chief, *Electronics*, McGraw-Hill Publishing Company, Inc., 330 W. 42 St., New York 18, N.Y. Born: October 28, 1896, McComb, Ohio. A.B., Western Reserve University, 1921; A.M., Harvard University, 1925.

Fellow Award, 1943, in

> "recognition of his accomplishments in obtaining publication of the technical information essential to the radio engineer."

Director, 1945. Committees: Annual Review, 1937–1945; Awards, 1945; Membership Solicitation Policy, 1945; New York Program, 1934–1941, *chairman, 1942*; Public Relations, 1943–1945; Publicity, 1937–1939.

FRANK A. HINNERS
(M'15—F'26)

Director, Field Service Department, Hazeltine Corporation, 38–25 Bell Blvd., Bayside, L.I., N.Y. Born: February 19, 1894, New York, N.Y. Electrical, Pratt Institute, 1915.

Charter Member, Wireless Institute.

Committees: New York Program, 1941–1942; Radio Receivers, 1933.

JOHN V. L. HOGAN
(M'15—F'26)

Consulting Engineer; President, WGXR, Interstate Broadcasting Company, Inc.; President, Radio Inventions, Inc.; President, Faximile, Inc.; 730 Fifth Ave., New York 19, N.Y. Born: February 14, 1890, Philadelphia, Pa.

President, 1920; Vice-President, 1916–1919; Manager, 1913–1915, 1921–1932; Director, 1916–1920, 1932–1936. Committees: Admissions, 1927; Awards, 1919, *chairman, 1928*; 1932–1933, 1945; Annual Review, 1937; Broadcasting, 1930–1937; Constitutional Amendments, *chairman, 1915*; Constitution and Laws, 1928–1929, *chairman, 1932–1933*; 1934–1936; Editing, *chairman, 1914*; Electro-Visual Devices, *chairman, 1933*; Facsimile, 1939–1945; Finance, 1915; Financial Matters, 1915; Increase of Membership, *chairman, 1916*; 1917–1919; Nominations, 1931, 1937–1938, 1943–1944, *chairman, 1945*; Papers, 1915–1919, 1942–1945; Publicity, *chairman, 1913*; 1914, *chairman, 1915*; 1916–1919; Receiving Sets, 1927–1928; Revision of the Constitution, 1925–1926; San Francisco Representation, 1915; Sections, 1925; Specifications for Steamship Radio Equipment, 1914; Standardization, 1912–1913, 1915, *chairman, 1916–1919*; 1920–1929; Standards, 1932–1933, 1936–1938; Television and Facsimile, *chairman, 1936–1937*; 1938; Use of the Transmission Unit, *chairman, 1928*; Wave Length Regulation, 1916, 1919.

Institute Representative: Fourth National Radio Conference, 1926; American Engineering Standards Committee (now American Standards Association), Sectional Committee on Radio, 1927–1932; Sectional Committee on Radio-Electrical Co-ordination, 1926–1937, 1939–1945; Sectional Committee on Electrical Installations on Shipboard, 1927–1932, 1936–1937.

LAWRENCE C. F. HORLE
(A'14—M'23—F'25)

Consulting Engineer, 90 West St., New York, N.Y., 17 Longfellow Ave., Newark, N.J. Born: May 27, 1892, Newark, N.J. M.E., Stevens Institute of Technology, 1914.

President, 1940; Director, 1934, 1936–1942, 1944–1945. Committees: Admissions, *ex officio, 1929*; 1934–1939, 1942; Constitution and Laws, 1942; Meetings and Papers, 1929; Membership, 1925, 1934; Membership Solicitation Policy, 1945; New York Program, 1933–1934; Nominations, 1934, 1941, 1943; Publicity, *ex officio, 1929*; Receiving Sets, 1927–1928; Sections, 1928, *ex officio, 1929*; 1936–1937, 1941–1942; Standards, *chairman, 1936–1938*; 1939, 1941–1943.

Buffalo-Niagara Section, *chairman*, 1927–1929.

CHARLES W. HORN
(A'14—M'28—F'30)

Captain, U.S. Naval Reserve, Special Assistant to Director of Naval Communications, U.S. Navy, 18th and Constitution Aves., Washington 25, D. C. Born: July 9, 1894, New York, N.Y.

Director, 1933–1934. Committees: Admissions, 1933–1937, 1940–1942. Broadcasting, 1928–1931; Broadcast, 1932–1937; New York Program, 1932, *chairman, 1933*; 1934; Public Relations, 1945; Sections, 1929–1930, *chairman, 1931–1932*; 1933; Television and Facsimile, 1936–1938.

Institute Representative: Committee for Observance of Decennial of Commercial Broadcasting, 1931–1932; National Advisory Council on Radio in Education, 1932, 1936–1940; National Advisory Council on Radio in Education, Committee on Engineering Developments, 1941–1943.

J. WARREN HORTON
(A'20—F'29)

Lieutenant Commander, U.S. Naval Reserve, Associate Professor, Department of Electrical Engineering, Massachusetts Institute of Technology, Cambridge 39, Mass. Born: December 18, 1889, Ipswich, Mass. S.B., 1914, Sc.D., 1935, Massachusetts Institute of Technology.

Committees: Awards, 1932; Board of Editors, 1930–1931, 1935–1940; Meetings and Papers, 1929, *chairman, 1930*; Standardization, *chairman, 1931–1932*; Standards, *chairman, 1933*; Technical Committee No. 3, Vacuum Tubes, 1930–1931.

Institute Representative: United States National Committee, Advisers on Symbols (International Electrotechnical Committee), 1932, 1936–1937, 1940–1945.

ALBERT W. HULL
(M'41—SM'43—F'44)

Assistant Director, Research Laboratory, General Electric Company, 1 River Rd., Schenectady 5, N.Y. Born: April 19, 1880, Southington, Conn. A.B., 1905, Ph.D., 1909, Yale University; Honorary Sc.D., Union University, 1930; Sc.D., Middlebury College, 1931; D.Eng., Worcester Polytechnic Institute, 1944.

Morris Liebmann Memorial Prize, 1930, in

> "recognition of the many advances in vacuum tube development which were due to his fundamental researches in the field of electronics."

Fellow Award, 1944, for his

> "many contributions to the development and design of electron tubes both for radio and industrial applications."

Howard N. Potts Medal, Franklin Institute, 1923.

LEWIS M. HULL
(J'17—A'19—M'27—F'28)

President, Aircraft Radio Corporation, 708 Main St., Boonton, N.J. Born: February 27, 1898, Great Bend, Kan. A.B., 1917, A.M., 1918; University of Kansas; Ph.D., Harvard University, 1922.

President, 1933; Junior Past President, 1934–1935;

Manager, 1929–1932; Director, 1932–1935. Committees: Admissions, 1927–1928; Awards, *chairman*, *1935*; 1936–1937; Broadcasting, *chairman*, *1928–1931*; Broadcast, 1932; Meetings and Papers, 1928–1930; New York Programs, 1931; Nominations, 1928, 1931, *chairman*, *1934*; 1935; Papers, 1931; Standardization, 1927–1928; Receiving Sets, 1927–1928; Use of the Transmission Unit, 1928.

Institute Representative: Radio Advisory Committee, Bureau of Standards, Department of Commerce, 1928–1932, 1936–1937; American Engineering Standards Committee (now American Standards Association), Sectional Committee on Radio, 1928; American Standards Association Sectional Committee on Radio, 1929–1932; National Advisory Council on Radio in Education, 1932, 1936–1937, 1939–1940; National Advisory Council on Radio in Education, Committee on Engineering Developments, 1941–1943.

AUGUST HUND
(M'16—F'27)

Technical Consultant, U.S. Navy Radio and Sound Laboratory, San Diego, Calif. Born: December 17, 1887, Offenburg, Baden, Germany. E.E., 1911, Eng.D., 1913, Technische Hochschule, Carlsruhe, Germany; graduate work, University of California.

Committees: Sections, *ex officio*, *1945*; Electro-Acoustic Devices, 1927–1928.

San Diego Section, *acting chairman*, 1945.

DORMAN D. ISRAEL
(A'23—M'30—F'42)

Vice-President in Charge of Engineering and Production, Emerson Radio and Phonograph Corporation, 111 Eighth Ave., New York 11, N.Y. Born: July 21, 1900, Newport, Ky. E.E., University of Cincinnati, 1923.

Fellow Award, 1942, in

> "recognition of his contributions to the engineering of broadcast receivers."

Committees: Admissions, *ex officio*, *1931*; Awards, 1943–1944; Membership, 1941; New York Program, 1940–1941; Papers, 1940–1941; Papers Procurement, *chairman*, *1942–1945*; Public Relations, 1940–1944; Radio Receivers, 1938–1941; Regular Papers, *chairman*, *1941*; Sections, *ex officio*, *1931–1932*; Television and Facsimile, 1936–1937.

Cincinnati Section, *chairman*, 1931–1932.

C. M. JANSKY, JR.
(A'18—M'25—F'28)

970 National Press Building, Washington 4, D.C. Born: June 28, 1895, Delton, Mich. B.A., 1917, M.A., 1919, University of Wisconsin.

President, 1934; Senior Past President, 1935; Junior Past President, 1936; Manager, 1929–1932; Director 1932–1942. Committees: Admissions, 1929–1930, *chairman*, *1931*; 1932–1933, *chairman*, *1936–1937*; 1938–1940; Awards, 1942; Board of Editors, 1941–1945; Broadcasting, 1931–1933; Broadcast, 1935–1936, *chairman*, *1937*; Constitution and Laws, 1932–1933, *ex officio*, *1934*; 1941; Education, 1944; Frequency Modulation, 1941–1945; Membership, 1925, 1927–1928, 1941–1943; Nominations, 1936, *chairman*, *1937*; 1938, *chairman*, *1939*; 1940–1942, 1945; Preparedness, 1941, 1945; Publicity, 1936; Radio Receivers, 1927–1928; Sections, 1925; Standardization, 1926, 1928, 1930–1933; Use of the Transmission Unit, 1928.

Institute Representative: American Documentation Institute, 1939–1943; First National Conference on Educational Broadcasting, 1937; American Council on Education, Planning Committee, National Conference on Educational Broadcasting, 1936–1937, 1939–1943; U.R.S.I. (International Scientific Radio Union) Executive Committee, 1936–1937, 1939–1945; American Standards Association Sectional Committee on Radio-Electrical Co-ordination, 1936–1937, 1939–1945.

KENNETH W. JARVIS
(A'24—M'27—F'34)

Consulting Engineer, 1140 Cherry St., Winnetka, Ill. Born: October 18, 1901, Mansfield, Ohio. B.E.E., Ohio State University, 1923.

Committees: Radio Receivers and Parts, 1930–1931; Receiving Sets, 1927–1928.

AXEL G. JENSEN
(A'23—M'26—F'42)

Television Research Engineer, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: February 17, 1896, Copenhagen, Denmark. E.E., Royal Technical College, Copenhagen, 1920; post graduate, Columbia University, 1921–1922.

Fellow Award, 1942, for his

> "constructive participation in the development of the short-wave transatlantic telephone, the development of broad-band, multichannel telephony, and the art of television."

Committees: Television and Facsimile, 1938–1945.

EWELL K. JETT
(A'29—M'38—F'39)

Commissioner, Federal Communications Commission, Washington, D.C. Born: March 20, 1893, Baltimore, Md.

Director, 1938. Committees: Public Relations, 1945; Sections, *ex officio*, *1935–1936*.

Washington Section, *chairman*, 1935–1936.

FRANK B. JEWETT
(F'20)

President, National Academy of Sciences, 350 Fifth Ave., New York 1, N.Y. and 2101 Constitution Ave., Washington 25, D.C. Born: September 5, 1879, Pasadena, Calif. A.B., Throop Polytechnic Institute, 1898; Ph.D., University of Chicago, 1902; D.Sc., New York University, 1925; D.Sc., Dartmouth College, 1925;

D.Sc., Columbia University, 1927; D.Sc., University of Wisconsin, 1927; D.Sc., Rutgers University, 1928; D.Eng., Case School of Applied Science, 1928; D.Sc., University of Chicago, 1929; LL.D., Miami University, 1932; D.Sc., Harvard University, 1936; LL.D., Rockford College, 1939; D.Sc., University of Pennsylvania, 1940; LL.D., Norwich University, 1944.

Distinguished Service Medal, U.S. Government Congressional Award, 1919; Edison Medal, American Institute of Electrical Engineers, 1928; Faraday Medal, Institution of Electrical Engineers, 1935; Franklin Medal, Franklin Institute, 1936; Washington Award, Western Society of Engineers, 1938; John Fritz Medal, John Fritz Medal Board, 1939.

CHARLES B. JOLLIFFE
(M'25—F'30)

Vice-President in charge of RCA Laboratories, Radio Corporation of America, Princeton, N.J. Born: November 13, 1894, Mannington, W.Va. B.S., 1915, M.S., 1920, West Virginia University; Ph.D., Cornell University, 1922; LL.D., West Virginia University, 1942.

Director, 1936–1937, 1944. Committees: Admissions, *ex officio, 1929*; 1938; Awards, 1942; Bibliography, 1930–1932; Broadcast, 1932, 1936–1937; Electro-Visual Devices, 1933; Frequency Modulation, 1941; Meetings and Papers, 1930; Nominations, 1937, 1941; Preparedness, 1941; Receiving Sets, 1927; Vacuum Tubes, 1927–1928; Sections, *ex officio, 1929–1930*; Television and Facsimile, 1936–1938; Standardization, 1925–1926, 1928–1931, *chairman*, Vacuum Tubes, 1927–1928, *chairman, 1930*.

Washington Section, *chairman*, 1929–1930.

Institute Representative: First National Conference on Educational Broadcasting, 1937; American Council on Education, Planning Committee National Conference on Educational Broadcasting, 1936–1937, 1939–1943; American Engineering Standards Committee (now American Standards Association), *chairman*, Technical Committee, Vacuum Tubes, *1926*.

IRA J. KAAR
(J'22—A'24—M'29—F'41)

Manager, Receiver Division, Electronics Department, General Electric Company, 1285 Boston Ave., Bridgeport 2, Conn. Born: October 17, 1902, Dunsmuir, Calif. B.S. (E.E.), University of Utah, 1924.

Director, 1939. Committees: Admissions, 1940; Annual Review, 1940–1945; Methods of Testing Apparatus, Equipment, and Devices, 1931; Public Relations, 1940, 1942; Radio Transmitters and Antennas, 1931; Standards, 1940–1945, Television, 1939, *chairman, 1940–1945*.

EDUARD KARPLUS
(A'31—F'38)

Development and Design Engineer, 275 Massachusetts Ave., Cambridge 39, Mass. Born: September 7, 1899, Moedling, Austria. Ingenieur, Technische Hochschule, Vienna, Austria, 1923.

MERVIN J. KELLY
(M'25—F'38)

Executive Vice-President, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: February 14, 1894, Princeton, Mo. B.S., Missouri School of Mines and Metallurgy, 1914; M.S., University of Kentucky, 1915; Ph.D., University of Chicago, 1918; D. Eng., University of Missouri, 1936.

Committees: Symbols, *chairman, 1933*; Vacuum Tubes, 1927–1928, 1930.

Institute Representative: American Engineering Standards Committee (now American Standards Association), Technical Committee, Vacuum Tubes, 1927–1928; American Standards Association, Technical Committee, Vacuum Tubes, 1929–1930.

GLEASON W. KENRICK
(A'23—M'29—F'33)

Professor of Physics, University of Puerto Rico, Rio Piedras, P.R. Born: May 25, 1901, Brockton, Mass. S.B., 1922, S.M., 1922, Sc.D., 1927, Massachusetts Institute of Technology.

Committees: Board of Editors, 1934; Meetings and Papers, 1930; Papers, 1931–1933; Sections, *ex officio, 1932–1934*.

Boston Section, *secretary*, 1932–1934.

HAROLD L. KIRKE
(M'25—SM'43—F'45)

Head of Research Department, The British Broadcasting Corporation, Balham, London, S.W. 12, England. Born: January 7, 1895, London, England.

Fellow Award, 1945, for his

> "services to broadcasting in the British Isles and in particular for his leadership in the research activities of the British Broadcasting Corporation."

HUGH S. KNOWLES
(A'25—F'41)

Vice-President, Jensen Radio Manufacturing Company, 6601 Laramie Ave., Chicago, Ill. Born: September 23, 1904, Hines, Iowa. A.B., Columbia University, 1927.

Fellow Award, 1941, for

> "engineering leadership in the field of acoustics and its radio applications."

Committees: Annual Review, 1938–1941; Board of Editors, 1945; Electroacoustics, 1936–1937, *chairman, 1938–1941*; Papers, 1941; Papers Procurement, 1942–1943; Regular Papers, 1941; Sections, *ex officio, 1934–1935*; Standards, 1938–1941; Symbols, 1940–1941, 1943–1945.

Chicago Section, *chairman*, 1934–1935.

FREDERICK A. KOLSTER
(A'12—M'13—F'16)

Consultant, Bureau of Ships, Electronics Division, Navy Department, Washington, D.C. Born: January 13, 1883, Geneva, Switzerland.

Director, 1933–1935. Committees: Admissions, 1935–1936; Membership, 1930–1932; Nominations, 1933; Papers, 1913; Sections, 1933; Standardization, 1914–1921, 1925, 1927–1931, Subcommittee on Marine and Direction-Finding Receivers, *chairman, 1930–1931*; Wave Length Regulation, 1916; Wave Propagation, 1937–1938.

FREDERICK R. LACK
(A'20—F'37)

Vice-President and Manager, Radio Division, Western Electric Company, Inc., 120 Broadway, New York 5, N.Y. Born: July 18, 1895, Eastbourne, England. S.B., Harvard University, 1925.

Director, 1940. Committees: Awards, 1941; Electronics, 1936–1940; Gas-Filled Tubes, *chairman, 1938*; Membership Solicitation Policy, *chairman, 1945*; Papers, 1942–1945.

Institute Representative: American Standards Association Board of Directors, 1945.

HORATIO W. LAMSON
(A'15—M'27—F'33)

Engineer, 275 Massachusetts Ave., Cambridge, Mass. Born: January 2, 1893, Somerville, Mass. S.B., Massachusetts Institute of Technology, 1915; A.M., Harvard University, 1917.

Sections Committee, *ex officio, 1937–1939.*

Boston Section, *chairman*, 1937–1939.

RALPH H. LANGLEY
(A'12—M'16—F'29)

Engineer, 5826 Little Neck Pkwy., Little Neck, L.I., N.Y. Born: January 5, 1889, New York, N.Y. E.E., Columbia University, 1913.

Committees: Admissions, *ex officio, 1929–1931*; 1945; Awards, 1934; Bibliography, 1930–1932; New York Program, 1934; Publicity, *ex officio, 1929*; Radio Telegraph Receiver Terminology, *chairman, 1924–1925*; Registration of Engineers, 1941; Sections, *ex officio, 1929*; 1930–1933, 1935; Standardization, 1924–1927, Technical Committee No. 1, Radio Receivers and Parts, 1930–1931, 1933; Standards, 1934–1935; Wave Length Regulation, 1916.

Cincinnati Section, *chairman*, 1929–1931.

ALBERT GEORGE LEE
(M'27—F'29)

Lieutenant Colonel, retired, Chedsworth, Chalfont St. Giles, England. Born: May 24, 1879, Conway, North Wales. B. Sc. (Engineering), University of London, 1903.

Medal of Honor, 1939, for his
> "accomplishments in promoting international radio services and in fostering advances in the art and science of radio communication."

Committees: Admissions, 1930.

PENDLETON E. LEHDE
(A'14—F'27)

President, Electron Engineering Company and President, Pendleton Shipyards Company, Inc., 333 St. Charles Ave., New Orleans 12, La. Born: October 2, 1892, New Orleans, La. B.E., 1914, M.E.E., 1926, Tulane University.

Committees: Admissions, *ex officio, 1929*; Membership, 1927–1929; Publicity, *ex officio, 1929*; Sections, 1928, *ex officio, 1929, 1933.*

New Orleans Section, *chairman*, 1928–1933.

WILLIAM W. LINDSAY, JR.
(A'24—M'26—F'39)

Assistant Chief Engineer and Chief of Design, Radar Engineering Division, Gilfillan Brothers, Inc., 1815 Venice Blvd., Los Angeles 6, Calif. Born: November 16, 1899, Overbrook, Pa. Privately educated, equivalent "Doktor Ingenieur" degree.

Committees: Membership, *ex officio, 1929*; Nominations, 1942; Sections, *ex officio, 1940–1941.*

Los Angeles Section, *secretary*, 1928–1929, *chairman*, 1940–1941.

DONALD G. LITTLE
(A'20—M'27—F'29)

Assistant Manager and Consulting Engineer, Industrial Electronics Engineering Department, Westinghouse Electric Corporation, 2519 Wilkins Ave., Baltimore 3, Md. Born: May 17, 1893, Kalamazoo, Mich. B.S. (E.E.), University of Michigan, 1917.

Committees: Board of Editors, 1944–1945; Meetings and Papers, 1928–1929; Standardization, Technical Committee No. 2, Radio Transmitters and Antennas, 1930–1931, Subcommittee on Nomenclature, Symbols, and Definitions, 1930–1931, Subcommittee on Methods of Testing Apparatus, Equipment, Devices, and Materials Used in Radio Transmitters and Antennas, 1930–1931; Standardization, 1931–1932; Standards, 1933; Transmitters and Antennas, 1933, 1936–1938, Subcommittee on Transmitters, *chairman, 1938.*

FREDERICK B. LLEWELLYN
(A'23—F'38)

Consulting Engineer, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: September 16, 1897, New Orleans, La. M.E., Stevens Institute of Technology, 1922; Ph.D., Columbia University, 1928.

Morris Liebmann Memorial Prize, 1935, for his
> "analysis and disclosures of the effects and reactions within vacuum tubes at ultra-high frequencies."

Director, 1939–1945. Committees: Awards, 1942; Board of Editors, 1941–1945; Electronics, 1939–1941, 1943; Executive, 1942–1944; High-Frequency Tubes, 1938, Subcommittee on Letter Symbols, 1938; Membership, 1941; Nominations, 1944; Papers, 1932–1939, *vice-chairman, 1940–1942, chairman, 1943–1945*; Symbols, 1940–1941.

ALFRED L. LOOMIS
(M'28—SM'43—F'44)

Physicist, 14 Wall St., New York 5, N.Y. Born: November 4, 1887, New York, N.Y. A.B., Yale University, 1909; LL.B., Harvard University, 1912; D.Sc., Wesleyan University, 1932; M.Sc., Yale University, 1933; LL.D., University of California, 1941.

John Price Wetherill Medal, The Franklin Institute, 1934.

Fellow Award, 1944, in

> "recognition of his work in the application of electronic techniques to medical research and for contributions to microwave development."

WILLIAM D. LOUGHLIN
(M'29—F'35)

President, Boonton Radio Corporation, 518 Main St., Boonton, N.J. Born: January 22, 1893, Philadelphia, Pa. A.B., St. Josephs College, 1912.

ARTHUR V. LOUGHREN
(A'24—M'29—SM'43—F'44)

Design Supervisor, Hazeltine Corporation, 263–89 Grand Central Pkwy., Little Neck, L.I., N.Y. Born: September 15, 1902, Rensselaer, N.Y. B.A., 1923, E.E., 1925, Columbia University.

Fellow Award, 1944, for his

> "many valuable contributions to broadcast and television engineering and his untiring efforts to advance this profession."

Phi Beta Kappa; Sigma Xi; Tau Beta Pi.

Committees: Admissions, 1931–1933; Membership, 1934; Radio Receivers, Subcommittee on Definitions, 1938; Standardization, Subcommittee on Vacuum Tubes, 1927–1928; Television, 1940–1945.

SAMUEL S. MACKEOWN
(M'29—F'40)

Professor of Electrical Engineering, California Institute of Technology, Pasadena 5, Calif. Born: December 3, 1895, New York, N.Y. B.A., 1917, Ph.D., 1923, Cornell University.

Committees: Board of Editors, 1941–1945.

Institute Representative: California Institute of Technology, 1941–1945.

IOURY G. MALOFF
(M'27—F'36)

Engineer, RCA Victor Division, Camden, N.J. Born: June 3, 1899, Vladivostock, Russia.

Committees: Standardization, Bibliography, 1928; Radio Receivers, 1927–1928; Tellers, 1940.

RAY H. MANSON
(M'23—F'30)

President, Stromberg-Carlson Company, 100 Carlson Rd., Rochester 4, N.Y. Born: August 25, 1877, Bath, Maine. B.S.(E.E.), 1898, E.E., 1901, D.Eng., 1933, University of Maine.

President, 1931; Junior Past President, 1932–1933; Manager, 1927–1930; Director, 1931–1933. Committees: Awards, 1932, 1940; Bibliography, 1930; Nominations, 1929–1930, *chairman, 1932*; 1934, 1940; Public Relations, 1940; Regular Papers, 1941; Standardization, 1926–1931; Technical Committee No. 4, Electro-Acoustic Devices, *chairman, 1927–1928*, 1930–1931, 1933; Tellers, 1932–1933; Television and Facsimile, 1936–1938.

Institute Representative: American Standards Association Electrical Standards Committee, 1936–1939.

ROBERT H. MARRIOTT
(M'12—F'15)

Consulting Engineer, 1470 E. 18 St., Brooklyn 30, N.Y. Born: February 19, 1879, Richwood, Ohio. B.Sc., Ohio State University, 1901.

President, The Wireless Institute, 1909–1912; I.R.E., Vice-President, 1913; Director, 1912–1913; Manager, 1914–1916, 1920–1922, 1926–1932; Director, 1932. Committees: Admissions, 1926, 1930–1931; Broadcasting, 1928–1933; Constitution and Laws, *chairman, 1928–1931*; Electro-Visual Devices, 1933; Finance, 1914; Membership, 1925; Meetings and Papers, *chairman, 1926–1927*; Nominations, 1928; Papers, 1915, 1931–1933; Publicity, *chairman, 1914*; 1915–1919; Standardization, *chairman, 1912–1913*; 1915, 1925; *chairman*, Specifications for Steamship Radio Equipment, 1914; San Francisco Representation, *1915*; Formation of Seattle Section, *chairman, 1915.*

Seattle Section, *chairman*, 1916–1919, 1924.

Institute Representative: Fourth National Radio Conference, 1926; National Advisory Council on Radio in Education, 1932, 1936–1937, 1939–1940; National Advisory Council on Radio in Education, Committee on Engineering Developments, 1941–1943; U.R.S.I. (International Scientific Radio Union) Executive Committee, American Section, 1931–1932.

WARREN P. MASON
(A'36—VA'39—F'41)

Research Physicist, Bell Telephone Laboratories, Inc., Murray Hill, N.J. Born: September 28, 1900, Colorado Springs, Colo. B.S. (E.E.), University of Kansas, 1921; M.A., 1924, Ph.D., 1928, Columbia University.

Fellow Award, 1941, for his

> "investigations of piezoelectric crystals and their application to quartz-crystal filters."

Piezoelectric Crystals Committee, 1941–1943, 1945.

EMIL E. MAYER
(F'34)

Consulting Engineer, 10 E. 40 St., New York 16, N.Y. Born: January 7, 1885, Elberfeld, Germany. E.E., Technical University of Berlin, 1906; D.S., University of Munich, 1919.

Committees: Specifications for Steamship Radio Equipment, 1914; Standardization, 1914; Wave Length Regulation, 1916.

ELMER D. McARTHUR
(M'42—SM'43—F'45)

Section Head, Research Laboratory, General Electric Company, 1 River Rd., Schenectady 5, N.Y. Born: May 3, 1903, Salamanca, N.Y. B.S. (E.E.), Union College, 1925.

Fellow Award, 1945, for his

> "developments in the field of ultra-high-frequency electron tubes."

Committees: Board of Editors, 1945.

BRUNSON S. McCUTCHEN
(A'21—M'26—F'32)

Partner, Communication Measurements Laboratory, 120 Greenwich St., New York 6, N.Y. Born: November 20, 1892, North Plainfield, N.J. Lit. B., 1915, E.E., 1917, Princeton University.

ARTHUR S. McDONALD
(M'23—F'41)

Chief Engineer, Amalgamated Wireless Australasia, 47 York, Sydney, N.S.W., Australia. Born: March 6, 1890, Castle Donnington, Victoria, Australia.

PAUL K. McELROY
(A'25—M'27—F'31)

Design Engineer, 275 Massachusetts Ave., Cambridge 39, Mass. Born: August 7, 1899, Toledo, Ohio. A.B., 1920, A.M., 1921, Harvard University.

Committees: Membership, 1940, *ex officio, 1941.*

Boston Section, *secretary,* 1939–1941.

LESLIE McMICHAEL
(M'20—F'25)

Chairman and Joint Managing Director, McMichael Radio, Ltd., Slough, Bucks, England. Born: November 17, 1884, Birkenhead, Cheshire, England.

Began experimental work in radio in 1903. Founded Radio Society of Great Britain, July, 1913; Vice-President, Radio Society of Great Britain, 1924; Honorary Member, Radio Society of Great Britain, 1945; Member, Institution of Electrical Engineers (England) 1927; Chairman, Council of Radio Manufacturers Association (England), 1923; Fellow, Television Society (England); President, British Institution of Radio Engineers, 1944–1945.

Committees: Membership, 1925; Receiving Sets, 1927; Sections, 1925; Standardization, 1926.

DONALD M. McNICOL
(A'14—M'14—F'24)

Consulting Communication Engineer, 25 Beaver St., New York, N.Y. Born: July 23, 1875, Hopetown, Ont., Canada.

Instructor, Teachers College, Columbia University; lecturer on communications, University of Utah, Sheffield Scientific School, Yale University, and Cooper Union.

President, 1926; Vice-President, 1925; Junior past president, 1927–1928; Manager, 1919–1924; Director, 1925–1926; Advertising Manager, 1921–1922. Committees: Admissions, 1927, 1935; Advertising, 1925; Bibliography, 1930–1932; Meetings and Papers, *chairman, 1925*; Membership, 1925; Nominations, 1928–1930, 1933; Publicity, 1931–1934; Sections, *chairman, 1925, 1928*; Standardization, *chairman, 1920–1924,* 1925, 1927.

Institute Representative: Fourth National Radio Conference, 1926; National Fire Protection Association (National Electric Code), 1936; American Engineering Standards Committee (now American Standards Association) Sectional Committee on Electric Wiring and Apparatus in Relation to Fire Hazard (National Electric Code), 1927–1930.

GEORGE F. METCALF
(A'34—M'38—F'42)

Colonel, Air Corps-Chief Radar Laboratory, Headquarters, Air Technical Service Command, Wright Field, Dayton, Ohio. Born: December 7, 1906, Milwaukee, Wis. B.S. (E.E.), Purdue University, 1928.

Fellow Award, 1942, for his

> "development work on vacuum tubes and vacuum-tube circuits and the successful coordination of many technical projects requiring broad scientific knowledge."

Committees: Cathode-Ray and Television Tubes, 1938; Electron-Beam Tubes, 1938; Electronics, 1936–1941; Photoelectric Devices, 1938; Small High-Vacuum Tubes, 1938.

Coppin Award, General Electric Company.

BENJAMIN F. MIESSNER
(A'37—F'37)

President, Miessner Inventions, Inc., Van Beuren Rd., Morristown, N.J. Born: July 27, 1890, Huntingburg, Ind. U. S. Naval Electrical School, 1909; Purdue University, 1913–1916.

JOHN M. MILLER
(F'36)

Superintendent, Special Electronic Research and Development Division, Naval Research Laboratory, Washington 20, D.C. Born: June, 1882, Hanover, Pa. B.A., 1904, M.A., 1907, Ph.D., 1915, Yale University.

JOHN MILLS
(M'16—F'30)

Retired, formerly with Bell Telephone Laboratories, Inc., 205 W. 57 St., New York 19, N.Y. Born: April 13, 1880, Morgan Park, Ill. A.B., University of Chicago, 1901; A.M., University of Nebraska, 1904; B.S., Massachusetts Institute of Technology, 1909.

J. P. MINTON
(F'39)

Chief, Physics Section, Research Department, Magnolia Petroleum Company, Box 900, Dallas 1, Texas. Born: November 7, 1889, Wapulla, Ill. Associate Engineer, Bradley Polytechnic Institute, 1910; B.S., Massachusetts Institute of Technology, 1912; Ph.D., University of Chicago, 1921.

Fellow, National Research Physics, 1921–1922; American Physical Society, 1925, and The American Association for the Advancement of Science, 1941. Sigma Xi, 1920.

Committees: Electro-Acoustic Devices, 1927–1928; Membership, 1942–1943.

ALBERT F. MURRAY
(A'20—M'26—F'38)

Consulting Television Engineer, DuPont Circle Bldg., Washington, D.C. Born: June 22, 1894, Decatur, Ala. B.A., Maryville College, 1915; B.S., Harvard University, 1918; S.B., Massachusetts Institute of Technology, 1918; D.Sc., Maryville College, 1939.

Director, 1936–1939. Committees: Awards, 1936; Cathode-Ray and Television Tubes, *chairman, 1938*; Electronics, 1937–1940; Electro-Visual Devices, 1933; Letter Symbols, 1938; Membership, 1929–1934, 1937–1939; Papers, 1934–1945; Sections, 1929–1930, 1936, *ex officio, 1937–1938*; Television and Facsimile, 1936–1938; Television, 1939–1945.

Philadelphia Section, *chairman*, 1937–1938.

EDWARD L. NELSON
(A'19—M'25—F'38)

Radio Development Engineer, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: March 10, 1891, Warsaw, Ind. B.S. (E.E.), Armour Institute of Technology, 1914.

Manager, 1932; Director, 1932–1937. Committees: Board of Editors, 1941–1945; Broadcasting, 1928–1931; Broadcast, *chairman, 1932–1936*; Meetings and Papers, 1928–1929; Nominations, 1932, 1935; Registration of Engineers, 1941–1943; Standardization, 1927–1931; Standards, 1933–1936; Use of the Transmission Unit, 1928.

Institute Representative: First National Conference on Educational Broadcasting, 1937; Planning Committee, National Conference on Educational Broadcasting, American Council on Education, 1936–1937, 1939–1943.

DWIGHT O. NORTH
(A'35—M'38—SM'43—F'43)

Radio Engineer, RCA Laboratories, Princeton, N.J. Born: September 28, 1909, Hartford, Conn. B.S., Wesleyan University, 1930; Ph.D., California Institute of Technology, 1933.

Fellow Award, 1943, for his

> "contributions to the knowledge of the fundamentals of vacuum-tube performance, especially with regard to fluctuation phenomena and the effects of electron transit time."

Committees: Papers, 1944–1945.

KENNETH A. NORTON
(A'29—M'38—SM'43—F'43)

The Pentagon, Washington 25, D.C. Born: February 27, 1907, Rockwell City, Iowa. B.S., University of Chicago, 1928.

Fellow Award, 1943, in

> "recognition of his work in applying his conclusions from the theory of radio wave propagation to the problems of frequency allocation."

Committees: Radio Wave Propagation, 1939–1940, 1942–1945; Wave Propagation Committee, 1937–1941.

HAROLD S. OSBORNE
(A'14—M'29—SM'43—F'45)

Chief Engineer, American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y. Born: August 1, 1887, Fayetteville, N.Y. B.S., 1908, Eng.D., 1910, Massachusetts Institute of Technology.

Fellow Award, 1945, for his

> "contributions in the electrical communication field including outstanding leadership and direction in the application of new techniques to telephony."

Committees: Standardization, 1926–1928.

ARTHUR A. OSWALD
(A'19—M'25—F'28)

Radio Equipment Engineer, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: March 3, 1891, Lake Linden, Mich. B.S. (E.E.), 1916, E.E., 1927, Armour Institute of Technology (now Illinois Institute of Technology).

Committees: Papers Procurement, 1942–1943; Regular Papers, 1941; Standardization, 1925.

LOUIS G. PACENT
(A'12—M'15—F'27)

President and Technical Director, Pacent Engineering Corporation, 79 Madison Ave., New York 16, N.Y. Born: June 23, 1893, New York, N.Y. I.E.E., Pratt

Institute, 1916; Professional Engineer, State of N.Y., 1940.

Advertising Manager, 1915–1917, 1919–1920. Committees: Membership, 1925, 1934, 1936–1940; New York Program, 1936–1937; Publicity, 1916–1919; Sections, 1926–1927; Standardization, 1929–1930; Tellers, *chairman, 1938.*

Institute Representative: American Engineering Standards Committee (now American Standards Association), *chairman*, Technical Committee, Component Parts and Wiring, *1926.*

CHARLES J. PANNILL
(F'29)

President, RCA Institutes, Inc., and President, Radiomarine Corporation of America, 30 Rockefeller Plaza, New York, N.Y. Born: May 13, 1879, Petersburg, Va. Private and public-school education.

Chevalier of the First Order of Leopold; Marconi Memorial Medal of Achievement, The Veteran Wireless Operators Association, 1943.

Committees: Publicity, 1916.

Washington Section, *secretary-treasurer*, 1914, *executive committee*, 1916–1919.

HAROLD O. PETERSON
(A'22—M'31—F'41)

Research Engineer, RCA Laboratories, Riverhead, L.I., N.Y. Born: November 3, 1899, Blair, Neb. B.Sc. (E.E.), University of Nebraska, 1921.

Member, Sigma Xi.

Fellow Award, 1941, for

> "engineering leadership in radio communications and contributions to the ultra-high-frequency field."

Committees: Board of Editors, 1944–1945; Papers, 1934–1944; Radio Receivers, 1936–1945; Radio Wave Propagation, 1939, 1942–1945; Standardization: Subcommittee on Aircraft Receivers, 1930–1931; Standards, 1934–1935; Transmitters and Antennas, 1936; Wave Propagation, 1937–1941.

GREENLEAF W. PICKARD
(M'12—F'15)

Consulting Engineer, 59 Dalton Rd., Newton Centre 59, Mass. Born: February 14, 1877, Portland, Maine.

Medal of Honor, 1926, for his

> "contributions as to crystal detectors, coil antennas, wave propagation and atmospheric disturbances."

Armstrong Medal, Radio Club of America, 1940.

President, 1913; Director, 1913. Committees: Board of Editors, 1928–1945; Bibliography, 1930–1932; Constitution and Laws, 1928–1931; Increase of Membership, *ex officio, 1913*; Meetings and Papers, 1927–1929; Nominations, 1929, 1933, *chairman, 1938*; Organization of Boston Section, 1914; Papers, *ex officio, 1913*; Publicity, *ex officio, 1913*; Specifications for Steamship Radio Equipment, 1914; Standardization, *ex officio, 1912–1913*; 1914–1915, 1925; Wave Length Regulation, 1916; Wave Propagation, 1937–1938.

GEORGE W. PIERCE
(M'13—F'15)

Rumford Professor of Physics, Emeritus, and Gordon McKay Professor of Communication Engineering, Emeritus, Research Laboratory of Physics, Harvard University, Cambridge, Mass. Born: January 11, 1872, Webberville, Texas. B.S., 1893, M.A., 1894, University of Texas; A.M., 1899, Ph.D., 1900, Harvard University.

Medal of Honor, 1929, for his

> "major contributions in the theory and operation of crystal detectors, piezoelectric-crystals and magnetostriction frequency controls, and magnetostriction devices for the production of sound; and for his instructional leadership as a teacher and as a writer of important texts in the electric-wave field."

Franklin Medal, Franklin Institute, 1943.

President, 1918–1919; Vice-President, 1915; Director, 1915, 1918–1919. Committees: Admissions, *ex officio, 1929–1931*; Organization of Boston Section, 1914; Publicity, *ex officio, 1929*; Sections, 1925, 1928, *ex officio, 1929–1932*; Standardization, 1914–1919.

Boston Section, *chairman*, 1922–1932.

FRANK A. POLKINGHORN
(A'25—F'38)

Member of the Technical Staff, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: July 23, 1897, Holbrook, Mass. B.S., University of California, 1922.

Committees: Admissions, 1943–1944, *vice-chairman, 1945*; Sections, 1941–1945; Standardization, Subcommittee on High-Frequency Receivers, 1930–1931; Radio Receivers, 1933.

RALPH K. POTTER
(A'25—M'26—F'41)

Director, Transmission Research, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: October 1, 1894, Elgin, Ill. B.S., Whitman College, 1917; E.E., Columbia University, 1923.

Committees: Awards, 1944; Papers, 1931–1941.

HARADEN PRATT
(A'14—M'17—F'29)

Vice-President and Chief Engineer: American Cable and Radio Corporation, Mackay Radio and Telegraph Company, Inc., All America Cables and Radio, Inc., The Commercial Cable Company, and Vice-President, Federal Telephone and Radio Corporation, International Telecommunication Laboratories, Federal Telecommunication Laboratories, 67 Broad St., New York

4, N.Y. Born: July 18, 1891, San Francisco, Calif. B.S., University of California, 1914.

Medal of Honor, 1944, in

> "recognition of his engineering contributions to the development of radio, of his work in the extension of communication facilities to distant lands, and of his constructive leadership in Institute affairs."

President, 1938; Secretary, 1943–1945; Treasurer, 1941–1942; Director, 1935–1945. Committees: Admissions, 1937; Annual Review, 1937; Awards, 1937, *chairman, 1939–1941*; 1944, *vice-chairman, 1945*; Board of Editors, 1941–1945; Constitution and Laws, 1941; Executive, *vice-chairman, 1942, secretary, 1943–1945*; Investments, 1944–1945; New York Program, 1933, 1935, *chairman, 1936*; 1937; Nominations, 1941–1942, *chairman, 1943*; Preparedness, *chairman, 1941*; Standardization, 1928–1931, Technical Committee No. 2, Radio Transmitters and Antennas, *chairman, 1930–1931*; 1932–1933; Standards, *chairman*, 1933; *1934–1935*; 1936–1938; Tellers, *chairman, 1936*.

Institute Representative: Radio Technical Planning Board, 1944–1945, *chairman*, 1945–1946; American Standards Association, Board of Directors, 1939–1941; Sectional Committee on Definitions of Electrical Terms, 1930–1945; Sectional Committee on Radio, 1936–1945.

JACKSON H. PRESSLEY
(A'20—F'31)

Chief Engineer, Farnsworth Television and Radio Corporation, 3301 S. Adams Street, Marion, Ind. Born: June 8, 1896, Rio Vista, Calif. B.S. (E.E.), University of California, 1920.

Committees: Radio Receivers, 1933.

RICHARD H. RANGER
(F'37)

Lieutenant Colonel, Signal Corps, 73 Winthrop St., Newark 4, N.J. Born: June 13, 1889, Indianapolis, Ind. B.S., Massachusetts Institute of Technology, 1911.

Committees: Meetings and Papers, 1928–1930; New York Programs, *chairman, 1930*; 1931–1932; Papers, 1931–1933.

ALEXANDER E. REOCH
(M'14—F'16)

Manager, Real Estate, RKO Service Corporation, 1270 Sixth Ave., New York 20, N.Y. Born: April 27, 1884, Sheffield, England. E.E., Sheffield University, England, 1902.

Manager, 1924–1927. Committees: Meetings and Papers, 1925; Radio Telegraph Transmitter Terminology, *chairman, 1924–1925*; Standardization, 1921–1926.

FRANCIS X. RETTENMEYER
(A'26—M'29—SM'43—F'44)

Chief Engineer, Federal Telephone and Radio Corporation, 200 Mt. Pleasant Ave., Newark, N.J. Born: July 27, 1900, Kendrick, Okla. B.S. (E.E.), University of Colorado, 1922.

Fellow Award, 1944, in

> "recognition of his accomplishments in the development of broadcast and automobile receivers and aviation radio."

Committees: Membership, 1938–1940; Papers, 1942–1945; Public Relations, 1941–1942; Publicity, 1939; Radio Receivers, 1936–1937; Sections, 1936; Standardization: Technical Committee No. 1, Radio Receivers and Parts, 1930.

CHESTER W. RICE
(A'16—M'26—F'28)

Consulting Engineer, General Electric Company, Schenectady, N.Y. Born: December 16, 1888, Lynn, Mass. S.B., 1910, M.E.E., 1911, Harvard University.

HAROLD B. RICHMOND
(A'14—M'23—F'29)

Chairman of the Board, General Radio Company, 275 Massachusetts Ave., Cambridge 39, Mass. Born: March 22, 1892, Medford, Mass. S.B., Massachusetts Institute of Technology, 1914.

Committees: Admissions, 1940; Nominations, 1940; Preparedness, 1941; Registration of Engineers, 1941–1943; Standardization, 1927–1930.

WALTER vanB. ROBERTS
(A'22—F'29)

Palmer Physical Laboratory, Princeton, N.J. Born: November 13, 1893, Titusville, Pa. B.S., 1915, E.E., 1917, Ph.D., 1924, Princeton University.

Committees: Use of the Transmission Unit, 1928.

RONALD J. ROCKWELL
(A'25—M'31—SM'43—F'45)

Engineering Director, Broadcasting Division, Crosley Radio Corporation, Cincinnati, Ohio. Born: February 5, 1904, Omaha, Neb. B.S. (E.E.), Iowa State College, Ames, Iowa, 1927.

Fellow Award, 1945, for his

> "active work in the affairs of the Institute and in the engineering of high-power international broadcast transmitters."

Committees: Sections, *ex officio 1938–1939*.

Cincinnati Section, *chairman*, 1938–1939.

GEORGE T. ROYDEN
(A'19—M'27—F'33)

Senior Engineer, Federal Telephone and Radio Corporation, 200 Mt. Pleasant Ave., Newark, N.J. Born: June 20, 1895, Fort Clark, Texas. A.B., 1917, Engineer, 1924, Leland Stanford Junior University.

Sigma Xi, 1924.

Committees: Admissions, 1941–1942, *chairman, 1943–1945*; Constitution and Laws, 1944; New York Program, 1938–1942; Sections, *ex officio, 1933–1934*; 1941–1945.

San Francisco Section, *chairman*, 1933–1934.

WALTER A. RUSH
(F'36)

Controller of Radio, Department of Transport, Room 294, Hunter Bldg., O'Connor St., Ottawa, Ont., Canada. Born: April 25, 1880, London, England.

Vice-President, 1942; Director, 1942.

FRANCIS M. RYAN
(J'14—A'17—M'26—F'40)

Radio Engineer, 195 Broadway, New York 7, N.Y. Born: February 4, 1895, Seattle, Wash. B.S. (E.E.), University of Washington, 1919.

Committees: Admissions, 1939; Meetings and Papers, 1930; New York Programs, 1930; Papers, 1931–1936; Publicity, 1930; Railroad and Vehicular Communication, 1945–1946; Tellers, 1938.

Institute Representative: Committee on Aeronautic Radio Research, Department of Commerce, 1930–1931; Liaison Committee on Aeronautic Radio Research, 1932, 1936–1937, 1939–1941.

ARTHUR L. SAMUEL
(A'24—VA'39—SM'44—F'45)

Member of Technical Staff, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: December 5, 1901, Emporia, Kan. A.B., College of Emporia, 1923; S.B., 1925, S.M., 1926, Massachusetts Institute of Technology.

Fellow Award, 1945, for his

> "fundamental work in the field of electronic research and for developments of electronic devices of particular value at very high frequencies."

Recipient of $100 prize for the best presentation of a paper of sound technical merit published in the PROCEEDINGS during 1937, for "A Negative-Grid Triode Oscillator and Amplifier for Ultra-High Frequencies."

Committees: Electronics, 1943–1945; High-Frequency Tubes, 1938; Vacuum Tubes, 1945–1946.

DAVID SARNOFF
(A'12—M'14—F'17)

Brigadier General; President, Radio Corporation of America, 30 Rockefeller Plaza, New York 20, N.Y. Born: February 27, 1891, Uzlian, Minsk, Russia. Honorary degrees: D.Sc., St. Lawrence University, 1927; D.Sc., Marietta College, 1935; D.Lit., Norwich University, 1935; D.C.S., Oglethorpe University, 1938; D.Sc., Suffolk University, 1939.

Secretary, 1915–1917; Director, 1915–1917; Manager, 1918–1920. Committees: Constitutional Amendments, 1915; Financial Matters, 1915; Increase of Membership, 1916–1919; Publicity, 1915–1916, *chairman, 1917–1919*; San Francisco Representation, 1915; Wave Length Regulation, 1916, 1919.

SERGEI A. SCHELKUNOFF
(A'40—F'44)

Member of the Technical Staff, Bell Telephone Laboratories, Inc., 463 West St., New York 14, N.Y. Born: January 27, 1897, Samara, Samara, Russia. B.A., 1923, M.A., 1923, State College of Washington; Ph.D., Columbia University, 1928.

Morris Liebmann Memorial Prize, 1942, for his

> "contributions to the theory of electromagnetic fields in wave transmission and radiation."

Fellow Award, 1944, in

> "recognition of his mathematical contributions to electromagnetic theory."

Committees: Antennas, 1945; Papers, 1945; Radio Wave Propagation and Utilization, 1945; Wave Guides, 1943–1944.

JOHN C. SCHELLENG
(A'23—M'25—F'28)

Radio Research Engineer, Bell Telephone Laboratories, Inc., Deal, N.J. Born: November 12, 1892, Freeport, Ill. A.B., Cornell University, 1915.

Committees: Annual Review, 1937; Antennas, 1944–1945; Awards, 1943; Handbook, 1945; Methods of Testing Apparatus, Equipment, and Devices, 1931; Standardization, 1931; Standards, 1933, 1936–1938; Transmitters and Antennas, *chairman, 1936–1937*; 1938–1944; Transmitters, *chairman, 1938*; 1944–1945.

JOHN SCOTT-TAGGART
(A'18—F'35)

Wynwood, Beaconsfield, Buckingham, England. Born: May 27, 1897, Bolton, England.

STUART W. SEELEY
(M'40—SM'43—F'43)

Manager, Industry Service Division, RCA Laboratories, 711 Fifth Ave., New York 22, N.Y. Born: June 23, 1901, Chicago, Ill. B.S. (E.E.), Michigan State College, 1925.

Fellow Award, 1943, for

> "the development of practical apparatus for the radio industry, particularly in the fields of television and high-frequency broadcast reception."

Committees: Admissions, 1944–1945; Circuits, 1944–1945; Education, 1945.

BENJAMIN E. SHACKELFORD
(A'23—M'26—F'38)

Assistant to Vice-President in Charge of RCA Laboratories, 30 Rockefeller Plaza, New York 20, N.Y. Born: August 12, 1891, Richmond, Mo. A.B., 1912, A.M., 1913, University of Missouri; Ph.D., University of Chicago, 1916.

Director, 1945. Committees: Awards, 1941, 1943–1944; Bibliography, *chairman, 1930–1931*; Board of Editors, 1937–1940; Frequency Modulation, 1942–1945; Meetings and Papers, 1929; New York Program, 1941–1942; Papers, 1932–1936; Papers Procurement, 1942–1943; Sections, 1929–1932, *chairman, 1933*; 1934, 1943–1945; Standardization, 1931–1932; Standards, 1933; Vacuum Tubes, *chairman, 1933.*

Institute Representative: American Standards Association Sectional Committee on Electrical Definitions, Subcommittee on Vacuum Tubes, 1936–1937, 1939–1945; Sectional Committee on Vacuum Tubes for Industrial Purposes, 1936–1937, 1939–1945.

HENRY S. SHAW
(A'17—M'21—F'35)

275 Massachusetts Ave., Cambridge 39, Mass. Born: November 29, 1884, Boston, Mass. A.B., Harvard University, 1906.

EMIL J. SIMON
(M'12—F'15)

President, Radio Navigational Instrument Corporation, 500 Fifth Ave., New York 18, N.Y. Born: October 25, 1888, New York, N.Y. Columbia University, 1909.

Secretary, 1913–1914; Director, 1913–1914; Manager, 1915. Committees: Publicity, 1913, 1915; Specifications for Steamship Radio Equipment, 1914; Standardization, 1915.

DONALD B. SINCLAIR
(J'30—A'33—M'38—SM'43—F'43)

Assistant Chief Engineer, General Radio Company, 275 Massachusetts Ave., Cambridge 39, Mass. Born: May 23, 1910. S.B., 1931, S.M., 1932, Sc.D., 1935, Massachusetts Institute of Technology.

Fellow Award, 1943, for the

> "development and application of various types of networks for high-frequency measurement of impedance."

Director, 1945. Committees: Antennas, 1944–1945; Papers, 1941–1945; Papers Procurement, *group chairman, 1945*; Television, 1940–1945; Transmitters and Antennas, 1941–1945.

Institute Representative: Radio Technical Planning Board, *alternate, 1945.*

JOSEPH SLEPIAN
(SM'45—F'45)

Associate Director, Westinghouse Research Laboratories, East Pittsburgh, Pa. Born: February 11, 1891, Boston, Mass. A.B., 1911, A.M., 1912, Ph.D., 1913, Harvard University.

Fellow Award, 1945, in

> "recognition of his contributions as scientist, engineer, and inventor to the field of electronics."

REGINALD L. SMITH-ROSE
(SM'44—F'44)

Superintendent, Radio Division, National Physical Laboratory, Teddington, Middlesex, England. Born: April 2, 1894, London, England. B.Sc., 1914, M.Sc., 1922, Ph.D., 1923, D.Sc., 1926, Imperial College of Science and Technology, London.

Fellow Award, 1944, in

> "recognition of his pioneer work in the field of direction finding and radio propagation, allied to his leadership of an outstanding radio research group."

Students Premium, 1917, Wireless Premium, 1925, 1938, 1939, Duddell Premium, 1942, Institution of Electrical Engineers, London; Coronation Medal, 1937.

Radio Wave Propagation Committee, 1944–1945.

GEORGE C. SOUTHWORTH
(M'26—F'41)

Radio Research Engineer, Bell Telephone Laboratories, Inc., Box 107, Red Bank, N.J. Born: August 24, 1890, Little Cooley, Pa. B.S., Grove City College, 1914; Ph.D., Yale University, 1923; Honorary Sc.D., Grove City College, 1931.

Morris Liebmann Memorial Prize, 1938, for his

> "theoretical and experimental investigations of the propagation of ultra-high-frequency waves through confined dielectric channels and the development of a technique for the generation and measurement of such waves."

Fellow Award, 1941, for his

> "pioneering investigations in ultra-high-frequency communication and transmission."

Committees: Circuit Elements, 1928; Fundamental Units and Measurements, 1933; Meetings and Papers, 1930; Papers, 1931–1934; Standardization, Bibliography, 1928; Wave Guides, 1943–1944.

ARCHIE M. STEVENS
(A'12—M'25—F'31)

Radio Engineer, International Telephone and Telegraph Corporation, 67 Broad St., New York 4, N.Y. Born: September 22, 1887, Glidden, Iowa. A.B., Leland Stanford Junior University, 1909.

Committees: Sections, *ex officio, 1940.*

Buenos Aires Section, *chairman*, 1940.

ELLERY W. STONE
(A'14—M'16—F'24)

Rear Admiral, U.S. Naval Reserve, Headquarters Allied Commission, APO 394, New York, N.Y. Born: January 14, 1894, Oakland, Calif.

Grand Officer, Crown of Italy, 1944; Commander, British Empire, 1945; Order of Knight of Grand Cross of St. Maurice and St. Lazarus, Italian Government, 1945; United States Army Distinguished Service Medal, 1945.

Committees: Meetings and Papers, 1930.

JULIUS A. STRATTON
(M'42—SM'43—F'45)

Professor of Physics and Director, Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge 39, Mass. Born: May 18, 1901, Seattle, Wash. S.B., 1923, S.M., 1925, Massachusetts Institute of Technology; Sc.D., 1927, Technische Hochschule, Zurich, Switzerland.

Fellow Award, 1945, in

> "recognition of his contributions as a teacher and author, adept in the field of fundamental research who has applied his knowledge to improve radio communications."

Committees: Annual Review, 1945–1946; Education, 1945; Radio Wave Propagation and Utilization, 1945–1946; Standards, 1945–1946.

WILLIAM O. SWINYARD
(A'37—M'39—SM'43—F'45)

Engineer in Charge, Hazeltine Electronics Corporation, 325 W. Huron St., Chicago, Ill. Born: July 17, 1904, Logan, Utah. B.S., Utah State College, 1927.

Fellow Award, 1945, in

> "recognition of his work in promoting electronics and the affairs of the Institute, particularly in his district."

Director, 1945. Committees: Education, 1945; Membership, *ex officio, 1943–1944*; Sections, *ex officio, 1944–1945*.

Chicago Section, *chairman*, 1944–1945; *secretary*, 1943–1944.

A. HOYT TAYLOR
(M'16—F'20)

Chief Consultant and Chief Co-ordinator for Electronics, Naval Research Laboratory, Washington 20, D.C. Born: January 1, 1879, Chicago, Ill. B.S., Northwestern University, 1902; Ph.D., University of Goettingen, Germany, 1909.

Morris Liebmann Memorial Prize, 1927, for his

> "work in connection with the investigation of radio transmission phenomena."

Medal of Honor, 1942, for his

> "contributions to radio communication as an engineer and organizer, including pioneering work in the practical application of piezoelectric control to radio transmitters, early recognition and investigation of skip distances and other high-frequency wave-propagation problems, and many years of service to the government of the United States as an engineering executive of outstanding ability in directing the Radio Division of the Naval Research Laboratory."

John Scott Medal and Premium, Board of City Trustees, Philadelphia, 1942; United States Medal for Merit, President of the United States, 1944.

President, 1929; Junior Past President, 1930–1931; Director, 1929. Committees: Awards, 1928–1931; Meetings and Papers, 1928; Membership, 1925; Sections, 1925, 1928.

Washington Section: Acting Executive Committee, 1919–1922; *acting chairman*, 1922–1924; *chairman*, 1924–1928.

CHARLES H. TAYLOR
(M'13—F'15)

390 Riverside Drive, New York 25, N.Y. Born: August 22, 1875, Uxbridge, Middlesex, England.

Committees: Antenna Terminology, *chairman, 1924–1925*; Standardization, 1915–1921, 1924–1925.

FREDERICK E. TERMAN
(A'25—F'37)

Dean, School of Engineering, Stanford University, Palo Alto, Calif. Born: June 7, 1900, English, Ind. A.B., 1920, Engineer, 1922, Stanford University; Sc.D., Massachusetts Institute of Technology, 1924; Honorary S.D., Harvard University, 1945.

President, 1941; Vice-President, 1940; Director, 1940–1943. Committees: Admissions, 1940; Awards, 1940, 1942–1943; Constitution and Laws, 1944–1945; Handbook, 1945; Membership, *ex officio, 1931*; 1939–1940, *chairman, 1942*; Nominations, 1943; Papers Procurement, 1944; Research, 1945; Sections, *ex officio, 1939*; Standards, 1934–1940.

San Francisco Section, *secretary*, 1931–1932; *chairman*, 1939.

Institute Representative: Stanford University, 1941; National Research Council, Division of Engineering and Research, 1944–1945.

HUBERT M. TURNER
(A'14—M'20—F'37)

Associate Professor of Electrical Engineering, Yale University, New Haven, Conn. Born: July 20, 1882, Hillsboro, Ill. B.S., 1910, M.S., 1915, University of Illinois.

President, 1944; Junior Past President, 1945; Director, 1933–1945. Committees: Admissions, 1939–1940, *chairman, 1941–1942*; 1943; Annual Review, 1937–1939, 1943–1944; Awards, *chairman, 1934*; 1938–1939, *chairman, 1940*; 1941; Bibliography, 1930–1932; Circuit Elements, *chairman, 1927–1928*; Constitution and Laws, *chairman, 1936–1940*; 1941–1943; Executive, *chairman, 1944*; Facsimile, 1943–1944; Fundamental Units and Measurements, *chairman, 1933*; Investments, 1944–1945; Meetings and Papers, 1929; Membership, 1927; Nominations, 1938, 1941, *vice-chairman, 1945*; Papers, 1932–1944; Papers Procurement, 1942–1943; Preparedness, 1941; Regular Papers, 1941; Sections, 1925; Standardization, 1925–1937; Standards, 1940–1945; Symbols, *chairman, 1940–1944*.

Institute Representative: Yale University, 1941–1945; U.S. National Committee of the International Electrotechnical Commission, 1944–1945. American Standards Association: Sectional Subcommittee on Letter Symbols for Radio Use, 1936; Electrical Standards Committee, 1939–1945; Sectional Committee on Specifications for Dry Cells and Batteries, 1932, 1936–1937, 1939–1945; Subcommittee on Communication Symbols of Sectional Committee on Graphical Symbols and Abbreviations for Use on Drawings, 1937, 1939–1945; Subcommittee on Letter Symbols for Radio Use of Sectional Committee on Letter Symbols and Abbreviations for Science and Engineering, 1937, 1939–1945; Sectional Committee on Letter Symbols and Abbreviations for Science and Engineering, 1940–1945.

MERLE A. TUVE
(A'45—F'45)

Director of Applied Physics Laboratory, Johns Hopkins University (on leave from post as Chief Physicist, Department of Terrestrial Magnetism, Carnegie Institution of Washington) 8621 Georgia Ave., Silver Spring, Md. Born: June 27, 1901, Canton, S.D. B.S., 1922, M.S., 1923, University of Minnesota; Ph.D., Johns Hopkins University, 1926.

Fellow Award, 1945, for

> "pioneering in the experimental probing of the ionosphere and giving to the world the first publication of the experimental proof of the existence of the ionosphere; and for having initiated at an early date the pulse method of probing by reflection which is the basis of modern radar."

EDWARD HILL ULLRICH
(M'26—F'39)

Standard Telephones and Cables, Ltd., Connaught House, London, W.C. 2, England. Born: December 8, 1894, Cardiff, Great Britain. Mechanical Sciences Tripos, Christ's College, Cambridge, 1921.

Institution Premium, Institution of Electrical Engineers, 1936.

HENDRIK JOHANNES VAN DER BIJL
(M'17—F'28)

Chairman, Electricity Supply Commission (Escom); Chairman, South African Iron and Steel Industrial Corporation, Ltd. (Iscor); Chancellor, University of Pretoria; Chairman and Managing Director, African Metals Corporation, Ltd. (Amcor); Erelid, Koninklyk Instituut van Ingenieurs (Holland); Director of South African Board of Barclays Bank: Honorary Colonel S.A. Tank Corps; Director-General of Supplies; Chairman, Vanderbijl Engineering Corporation, Ltd., Chairman, Vanderbijl Park Estate Company, Escom House, Rissik St., Johannesburg, South Africa. Born: November 23, 1887, Pretoria, South Africa. B.A. (Hons.), Victoria College, Stellenbosch; D.Sc. (honoris causa), Stellenbosch University; M.A., Ph.D., University of Leipzig; LL.D. (honoris causa), Capetown University.

Foreign Associate, National Academy of Sciences of the United States; Fellow, Royal Society.

Vice-President, 1945; Director, 1945.

BALTHASAR VAN DER POL
(M'25—F'29)

Chief, Radio Research, N.V. Philips, Eindhoven, Netherlands; Professor of Electrical Engineering, Delft University. Born: January 27, 1889. D. Sc., Utrecht, 1919.

Medal of Honor, 1935, for his

> "fundamental studies and contributions in the fields of circuit theory and electromagnetic wave propagation phenomena."

Vice-President, 1934; Director, 1934. Committees: Electronics, 1936–1940; Meetings and Papers, 1929; Wave Propagation, 1937–1939.

ARTHUR F. VAN DYCK
(A'13—M'18—F'25)

Commander, U.S. Naval Reserve, Navy Department, Washington 8, D.C. Born: May 20, 1891, Stuyvesant Falls, N.Y. Ph.B., Yale University, 1911.

Modern Pioneer Award, National Association of Manufacturers, 1942.

President, 1942; Senior Past President, 1944; Manager, 1930–1932; Director, 1932–1935, 1939–1944. Committees: Admissions, 1929–1931, *chairman, 1932–1933*; 1934, 1937–1939, *chairman, 1940, 1943*; Annual Review, *chairman, 1937–1939*, 1943–1944; Awards, 1934, 1940; Bibliography, 1930–1932; Constitution and Laws, 1933–1934, 1943; Executive, *chairman, 1942*; 1943; New York Program, *chairman, 1934*; 1935, 1939–1940; Nominations, 1932; Papers, 1940; Papers Procurement, 1942–1943; Public Relations, 1940, *chairman, 1941*; 1943, 1945; Receiving Sets, 1927–1928; Regular Papers, 1941; Tellers, 1932–1933, *chairman, 1935*; Standards, 1933–1935.

Institute Representative: American Standards Association Sectional Committee on Preferred Numbers, 1932, 1936–1937, 1939–1945; A.E.S.C. (now American Standards Association), *chairman*, Technical Committee on Transmitting and Receiving Sets and Installations, *1926*.

KARL S. VAN DYKE
(A'15—M'26—SM'43—F'44)

Professor of Physics, Wesleyan University, Scott Laboratory, Middletown, Conn. Born: December 8, 1892, Brooklyn, N.Y. B.S., 1916, M.S., 1917, Wesleyan University; Ph.D., University of Chicago, 1921.

Fellow Award, 1944, in

> "recognition of his work in research on characteristics of piezoelectric crystals and their application to frequency control."

Committees: Annual Review, 1941; Board of Editors, 1932–1940; Meetings and Papers, *chairman, 1929*; 1930; Membership, *ex officio, 1927*; 1942–1945; Papers, 1931–1933, 1944–1945; Papers Procurement, *group chairman, 1945*; Piezoelectric Crystals, *chairman, 1941*; 1942–1945; Sections, *ex officio, 1934–1935*; Standards, 1941.

Connecticut Valley Section, *secretary-treasurer*, 1927, *chairman*, 1934–1935.

KENNETH B. WARNER
(A'18—M'22—F'36)

Secretary and General Manager, The American Radio Relay League, Inc., 38 LaSalle Rd., West Hartford 7, Conn. Born: October 3, 1894, Cairo, Ill.

Committees: Publicity, 1931–1939; Standardization, 1928–1931.

EDWARD M. WEBSTER
(A'30—M'38—SM'43—F'44)

Captain, U.S. Coast Guard, Chief Communication Officer, U.S. Coast Guard Headquarters, 1300 E St., N.W., Washington, D.C. Born: February 28, 1889, Washington, D.C.

Fellow Award, 1944, for his

> "contributions to the development of the maritime mobile radio services and his leadership in promoting measures for enhancing the safety of life and property at sea."

Committees: Membership, 1940; Public Relations, 1945; Sections, *ex officio, 1942*.

Washington Section, *secretary*, 1940, *chairman*, 1942.

JULIUS WEINBERGER
(A'13—F'25)

Radio Engineer, RCA Laboratories, Industry Service Division, 711 Fifth Ave., New York 22, N.Y. Born: July 22, 1893, New York, N.Y. B.S., College of the City of New York, 1913.

Modern Pioneer Award, National Association of Manufacturers, 1940.

Committees: Meetings and Papers, 1929.

HAROLD A. WHEELER
(A'27—M'28—F'35)

Radio Engineer, Hazeltine Corporation, Little Neck, L.I., N.Y. Born: May 10, 1903, St. Paul, Minn. B.S., George Washington University, 1925.

Morris Liebmann Memorial Prize, 1940, for his

> "contribution to the analysis of wide-band high-frequency circuits particularly suitable for television."

Modern Pioneer Award, National Association of Manufacturers, 1940; Member, Sigma Xi, 1927.

Director, 1934, 1940–1945. Committees: Annual Review, 1937, 1940–1945; Awards, 1942, *chairman, 1943*; Bibliography, 1930–1932; Board of Editors, 1940–1945; Broadcast, 1935–1937; Circuits, 1944–1945; Executive, 1943–1944; Handbook, 1945–1946; Meetings and Papers, 1929–1930; Membership, 1941–1942; New York Programs, 1931; Papers, 1931–1939; Papers Procurement, 1942–1943, *group chairman, 1944*; Public Relations, 1940; Radio Receivers, *chairman, 1933, 1936–1938*; Radio Receivers: Definitions, 1938, Testing Apparatus, 1938, Test Procedures, 1938; Regular Papers, 1941; Special Papers, 1941; Standardization: Technical Committee No. 4, Electro-Acoustic Devices, 1927–1928, 1930–1932; Standards, 1933, 1936–1938, *chairman, 1940–1945*; Use of the Transmission Unit, 1928.

Institute Representative: National Television System Committee, *alternate, 1941–1943*.

LYNDE P. WHEELER
(F'28)

Chief, Technical Information Division, Federal Communications Commission, 502 Star Building, Washington 4, D.C. Born: July 27, 1874, Bridgeport, Conn. Ph.B., 1894, Ph.D., 1902, Yale University.

President, 1943; Junior Past President, 1944; Senior Past President, 1945; Director, 1940–1945. Committees: Admissions, *ex officio, 1930–1932*; Bibliography, 1930–1932; Board of Editors, 1932–1942; Circuit Elements, 1928; Executive, *chairman, 1943*; Frequency Modulation, 1941–1945; Generating Apparatus and Theory, 1930; Meetings and Papers, 1929–1930; Membership Solicitation Policy, 1945; Nominations, 1939, 1942, 1944; Papers, 1931–1932, 1942–1943; Public Relations, 1945; Regular Papers, 1941; Sections, *ex officio, 1930–1932*; 1942; Standards, 1937, *chairman, 1938–1939*.

Washington Section, *chairman*, 1930–1932.

WILLIAM C. WHITE
(A'15—M'25—F'40)

Electronics Engineer, Research Laboratory, General Electric Company, 1 River Rd., Schenectady 5, N.Y.

Born: March 24, 1890, Brooklyn, N.Y. E.E., Columbia University, 1912.

Director, 1943–1945. Committees: Awards, 1944, *chairman, 1945*; Bibliography, 1930–1943; Board of Editors, 1930, 1944–1945; Education, 1945; Meetings and Papers, 1928–1930; Nominations, 1933, 1940, 1944–1945; Papers, 1931–1944; Papers Procurement, *group chairman, 1944–1945*; Standardization, 1925, 1930–1931, Bibliography, 1928; Vacuum Tubes, 1927–1928.

LAURENS E. WHITTEMORE
(A'16—M'25—F'27)

Special Representative, American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y. Born: August 20, 1892, Topeka, Kan. A.B., Washburn College, 1914; M.A., University of Kansas, 1915.

Vice-President, 1928; Manager, 1926–1927, 1929; Director, 1928, 1935–1937. Committees: Annual Review, 1937–1939, *chairman, 1940–1945*; Awards, 1937; Bibliography, 1930–1932; Board of Editors, 1929–1945; Broadcast, 1933; Direction Finding Terminology, *chairman, 1924–1925*; Electro-Acoustic Devices, 1927–1928; Meetings and Papers, 1929; Membership, *chairman, 1925*; Sections, *chairman, 1926*; Standardization, 1920–1925, *chairman, 1926–1928*; 1930–1935; Standards, 1944–1945; Symbols, *chairman, 1944–1945*; Tellers, 1934.

Institute Representative: U.S. National Committee, Advisers on Symbols (International Electrotechnical Committee), 1932, 1936–1937, 1939–1945; American Standards Association: Sectional Committee on Graphical Symbols and Abbreviations for Use on Drawings, 1937, 1939; American Engineering Standards Committee (now American Standards Association), Sectional Committee on Standards for Drawings and Drafting Room Practices, 1927–1932, 1936–1937, 1939; Sectional Committee on Radio, 1930–1932, 1936–1937, 1939–1945; Subcommittee on Electrical Abbreviations, Including Radio, 1927–1932; Sectional Committee on Radio-Electrical Co-ordination, 1936–1937, 1939–1945.

RAYMOND M. WILMOTTE
(M'29—F'38)

Consulting Radio Engineer, 1469 Church St., N.W., Washington 5, D.C. Born: August 13, 1901, Paris, France. M.A., Cambridge University, England, 1921.

Premium for Research, Institution of Electrical Engineers, 1930.

Committees: Aircraft Receivers, 1930–1931; Handbook, 1945; New York Program, 1933; Nomenclature, Symbols, and Definitions, 1930–1931; Papers, 1932–1933; Radio Receivers, 1940–1945; Radio Transmitters and Antennas, 1930–1931; Sections, 1932; Standardization, 1931–1933.

WILLIAM WILSON
(M'26—F'28)

Instructor, Phillips Exeter Academy, Exeter, N.H. Born: March 29, 1887, Preston, Lancashire, England. B.Sc., 1907, M.Sc., 1908, D. Sc., 1913, Manchester University; B.A., Cambridge University, 1912.

Medal of Honor, 1943, for his

> "achievements in the development of modern electronics, including its application to radiotelephony, and for his contributions to the welfare and work of the Institute."

Manager, 1932; Director, 1932–1936. Committees: Awards, *chairman, 1932–1933*; 1934–1936; Bibliography, 1930–1932, 1934; Board of Editors, 1929–1945; Meetings and Papers, 1927–1929; Nominations, 1936; Papers, *chairman, 1931–1942*; Standardization: *chairman*, Subcommittee on Methods of Testing Apparatus, Equipment, Devices, and Materials Used in Radio Transmitters and Antennas, *chairman, 1930–1931*; Subcommittee on Nomenclature, Symbols, and Definitions, 1930–1931; Technical Committee No. 2, Radio Transmitters and Antennas, *vice-chairman, 1930–1931*; *chairman, 1932–1933*; Standards, 1930–1932; *chairman, 1933*; 1934–1940.

Institute Representative: Committee on Applied Physics, 1936–1937, 1939–1943.

ROGER M. WISE
(A'26—M'30—F'37)

Vice-President in Charge of Engineering, Sylvania Electric Products, Inc., 500 Fifth Ave., New York 18, N.Y. Born: April 6, 1898, Fort Wayne, Ind. Attended University of California.

Committees: Admissions, 1940, 1944; Meetings and Papers, 1929; Papers Procurement, 1942–1944; Public Relations, 1942; Regular Papers, 1941; Standardization: Definitions, 1933, Technical Committee No. 3, Vacuum Tubes, 1930–1931, 1933.

IRVING G. WOLFF
(A'27—VA'39—F'42)

Research Engineer, RCA Laboratory, Princeton, N.J. Born: July, 1894, New York, N.Y. B.S., Dartmouth College, 1916; Ph.D., Cornell University, 1923.

Fellow Award, 1942, for

> "basic research in centimeter-wave radio and application of it to the development of navigation instruments."

Committees: Education, 1945; Electronics, 1943–1945; High-Frequency Tubes, 1938; Meetings and Papers, 1928–1930; Papers, 1931–1945; Sections, *ex officio, 1936*; 1937; Standardization: Technical Committee No. 4, Electro-Acoustic Devices, 1927–1928, 1930–1931; Use of the Transmission Unit, 1928.

Philadelphia Section, *chairman*, 1936–1937.

Institute Representative: American Standards Association Sectional Committee on Acoustical Measurements and Terminology, 1936–1937, 1939.

ROBERT B. WOOLVERTON

(A'13—M'13—F'15)

Colonel, United States Regular Army, retired, 1705 Holloway Ave., San Francisco 12, Calif. Born: September 22, 1884, Greensboro, Pa. S.B., Harvard University, 1912.

Committees: Increase of Membership, 1914; Papers, 1915; Publicity, 1915–1919; San Francisco Representation, *chairman, 1915*.

LEO C. YOUNG

(A'19—M'29—SM'43—F'43)

Assistant Co-ordinator for Electronics, Naval Research Laboratory, U.S. Naval Research Laboratory, Washington 20, D.C. Born: January 12, 1891, Danville, Ill.

Fellow Award, 1943, in

> "recognition of his pioneer work on the causes of the vagaries of short-wave propagation and for his invaluable contributions to the efficient operation of an outstanding research laboratory."

Committees: Sections, *ex officio*, *1940*.

Washington Section, *secretary*, 1938–1939, *chairman*, 1940.

PAUL D. ZOTTU

(A'31—M'38—SM'43—F'44)

Consultant, 8 Arrowhead Rd., Louisville 7, Ky. Born: March 22, 1906, Bucharest, Roumania. B.A., Wesleyan University, 1931.

Fellow Award, 1944, for his

> "contributions in the field of high-frequency heating, particularly in the application of dielectric heating in industry."

Committees: Annual Review, 1945–1946; Board of Editors, 1943; Industrial Electronics, 1945–1946; Standards, 1945–1946.

VLADIMIR K. ZWORYKIN

(M'30—F'38)

Associate Research Director of RCA Laboratories, Princeton, N.J. Born: July 1889, Mourom, Russia. E.E., Petrograd Institute of Technology, 1912; Ph.D., University of Pittsburgh, 1926; D.Sc., Brooklyn Polytechnic Institute, 1938.

Morris Liebmann Memorial Prize, 1934, for his

> "contributions to the development of television."

Modern Pioneer Award, National Association of Manufacturers, 1940; Rumford Medal, American Academy of Arts and Sciences, 1941.

Committees: Board of Editors, 1944–1945.

NAMES OF SENIOR MEMBERS

(As of December 31, 1945)

A

Abel, A. E.
Aboussleman, W. C.
Aceves, J. G.
Ackman, H. E.
Adair, G. P.
Adams, J. J.
Adams, N. I., Jr.
Adorjan, P.
Affel, H. A.
Aiken, C. B.
Ainsworth, A. L.
Aiya, S. V. C.
Akerman, B.
Albright, R. B.
Allen, H. E.
Allen, J. E.
Allen, J. G.
Allison, R. E.
Amis, F. H.
Amy, E. V.
Anderson, E. I.
Anderson, E. C.
Anderson, F. B.
Anderson, H. V.
Anderson, P. A.
Andres, L. J.
Andrew, V. J.
Andrews, G. J.
Andrews, P. D.
Angevine, O. L., Jr.
Anton, N. G.
Appel, H. W.
Arnaud, J. P.
Arnson, L.
Asserson, R.
Aston, J. P.
Atkins, C. E.
Attwood, S. S.
Atwood, J. B.
Aull, W., Jr.
Austin, F. M.
Avery, R. D.
Ayer, R. B.
Ayres, R. C.

B

Bach, J. R.
Bach, R. O.
Backus, C. D.
Bagnall, V. B.
Bailey, A. B.
Bailey, W. M.
Bair, R. S.
Baker, C. I.
Baldwin, A. V.
Baldwin, C. F.
Baldwin, J. M.
Baldwin, M. W., Jr.
Ball, I. D.
Ballentine, E. C.
Barco, A. A.
Bardin, W. F.
Bareiss, M.
Barhydt, C. R.
Barker, P. L.
Barkley, W. J.
Barnes, J. L.
Barrett, A. E.
Barron, J. H.
Barry, J. G.
Bartelink, E. H.
Barton, L. E.
Bash, F. E.
Batcheller, A.
Batcher, R. R.
Bates, J. F.
Bauer, B.
Baxter, C.
Bayles, J. C.
Bayly, B. De F.
Beach, A. R.
Beal, R. R.
Beam, R. E.
Bean, L. P. R.
Bearden, J. A.
Bearup, T. W.
Beatty, W. A.
Becker, S.
Bedford, L. H.
Beers, G. L.
Beloungy, J. J.
Belov, F. I.
Bender, L. B.
Bennett, G. T.
Bennett, H. S.
Bennett, R.
Bennett, R. D.
Bennett, W. R.
Benning, H. H.
Beranek, L. L.
Berkner, L. V.
Bernstein, H. E.
Betts, P. H.
Bingley, F. J.
Binyon, B.
Bird, R. J.
Biser, M. H.
Bishop, J. B.
Bishop, N.
Biskner, L. J.
Black, D. M.
Black, H. S.
Black, K. C.
Black, W. L.
Blahna, C.
Bleil, F. J.
Bloomer, T. M.
Bode, H. W.
Bollman, J. H.
Bond, C. H.
Bond, M. E.
Bond, W. L.
Bonney, R. B.
Booker, H. G.
Booth, H. M.
Boswau, H. P.
Bourland, L. T.
Bousquet, A. G.
Bowden, B. V.
Bower, J. L.
Bowie, R. M.
Bowles, E. L.
Boyajian, J. A.
Braaten, A. M.
Brackett, Q. A.
Bradley, W. E.
Brady, J. B.
Brainerd, J. G.
Bramhall, F. B.
Branch, W. E.
Brauer, H. H.
Breazeale, W. M.
Brick, F. R., Jr.
Bridgland, C. J.
Briggs, L. A.
Briggs, T. H.
Brigham, C. E.
Brillouin, L. N.
Brittin, F. L.
Brolly, A. H.
Bronwell, A. B.
Brooker, V. M.
Brothers, J. T.
Brott, F. J.
Brown, J. E.
Brown, W. N., Jr.
Brown, W. W.
Brown, W. J.
Browne, G. C. W.
Browning, G. H.
Bruce, E.
Bruck, G. G.
Brumbaugh, J. M.
Brunet, M.
Buchanan, A. B.
Buckthal, E. P.
Bulgin, A. F.
Bull, V. G.
Burgess, W. B.
Burghard, G. E.
Burnett, C. E.
Burns, E. E.
Burnside, C. J.
Burrill, C. M.
Burroughs, H. A.
Burton, E. T.
Bush, G. P.
Bushby, T. R. W.
Bussard, E. J. H.
Byerlay, H. L.
Byrne, J. F.
Byrnes, I. F.

C

Cabot, G. E.
Cady, C. A.
Cage, J. M.
Cahill, F. C.
Caldwell, J. J., Jr.
Caldwell, L. G.
Callahan, J. L.
Callanan, J. A.
Campbell, J. A.
Campbell, W. H.
Canavaciol, F. E.
Cannon, H. B.
Carnahan, C. W.
Carpenter, D. D.
Carpenter, R. E. H.
Carroll, M. J.
Carter, C. J.
Carter, G. W.
Carter, P. S.
Case, N. P.
Castle, D. H.
Catt, J. E.
Cawein, M.
Chaffee, J. G.
Chakravarti, S. P.
Chambers, C. C.
Chambers, D. E.
Chambers, J. A.
Chatterjea, P. K.
Chesney, A. P.
Chesnut, R. W.
Chipp, R. D.
Christaldi, P. S.
Church, J. F.
Cimorelli, J. T.
Clapp, R. G.
Clark, J. H.
Clark, R. G.
Clark, T. H.
Clark, W. B.
Clegg, J. E.
Clifton, B. S. Y.
Cobb, F. A.
Cobine, J. D.
Cochran, L. B.
Cohen, S.
Cohen, T. A.
Cohn, H.
Cole, D. D.
Coleman, J. B.
Coles, R. V.
Collison, P. B.
Colmar, P. V.
Colwell, R. C.
Condon, E. U.
Content, E. J.
Cooke, N. M.
Cooke, W. T.
Coram, R. E.
Corbett, C. W.
Corderman, R. C.
Cornell, J. I.
Corwith, H. P.
Cotter, W. F.
Courchene, H. B.
Cowan, F. A.
Craig, P. H.
Craig, P. M.
Crampton, W. J.
Crawford, J. D.
Crom, G. C., Jr.
Crooks, R. K.
Crosley, P., Jr.
Crossley, A.
Crossley, G. L.
Crowley, H. L.
Cruse, A. W.
Cullum, A. E., Jr.
Culver, C. A.
Cumming, K. N.
Cummings, B. R.
Cunningham, F. W.
Cunningham, O. B.
Curran, G. W.
Curtis, L. F.
Curtiss, A. N.

D

Dane, F. W.
Daniell, C. M.
Darlington, E. S.
Dart, H. F.
David, B. W.
Davies, G. L.
Davies, R. H.
Davis, C. L.
Davis, D. M.
Davis, G. C.
Davis, R. J.
Davis, S. L.
Davis, T. McL.
Dawson, H. S.
Deal, H. B.
Dean, C. E.
Deardorff, R. W.
Dearle, R. C.
DeBivar, A. M. B.
Decino, A.
DeCola, R.
Deeley, P. McK.
Deiler, T. G.
Dellenbaugh, F. S.
Demarest, C. S.
DeNeuf, D. K.
Denstaedt, E. C.
DeOliveira, A. M.
DeRemer, C. W.
Devore, H. B.
DeVore, L. T.
Dewalt, K. C.
Dewitt, J. H., Jr.
D'Humy, F. E.
Dickey, E. T.
Dickieson, A. C.
Dickinson, W. A.
Dietzold, R. L.
Dinger, H. E.
Dingley, E. N., Jr.
Distad, M. F.
Ditcham, W. T.
DiToro, M. J.
Dobbie, L. G.
Dobell, H.
Dolbear, B. L.
Doll, H. G.
Dome, R. B.
Donal, J. S., Jr.
Donald, D. D.
Dondanville, R. V.
Donovan, W. E.
Doolittle, F. M.
Dow, W. G.
Dowie, J. A.
Downie, J. W.
Downs, G. W., Jr.
Drake, F. H.
Drake, R. E.
Dresser, W. R.
Drew, C. E.
Dreyer, J. F., Jr.
Dubinin, A. V.
Dudley, B.
Dudley, H. W.
Dudman, V. H.
Duffendack, O. S.
Dumeresque, J. S.
Duncan, R. D., Jr.
Duncan, R. L.
Dunlap, O. E., Jr.
Dunn, L. J.
Dunn, W. L.
Dunning, O. M.
Dupree, E. M.
Dushman, S.
DuTreil, L. J. N.
Duttera, W. S.
Dyer, J. N.

E

Eager, M.
Earnshaw, D. P.

Earp, C. W.
East, L. A. W.
Easton, I. G.
Eaton, W. G.
Eaves, A. J.
Ebel, A. J.
Edson, J. O.
Edson, W. A.
Edwards, B. J.
Eells, M. M.
Eichel, J. H.
Eilenberger, S. D.
Eiselein, J. E.
Elder, T. A.
Eldred, W. N.
Elliott, H. F.
Ellis, W. G.
Ellsworth, W. C.
Eltgroth, G. V.
Emerson, K. H.
Emery, E. J.
Engel, F. H.
Epperson, J. B.
Epstein, D. W.
Everest, F. A.
Everett, L. C.
Everett, L., Jr.

F

Farley, T. S.
Faulkner, H.
Fay, C. E.
Felch, E. P.
Felix, E. H.
Ferguson, J. D.
Ferguson, J. G.
Fernsler, G. L.
Ferrar, R. C.
Ferrell, E. B.
Ferrill, T. M., Jr.
Fett, G. H.
Fetzer, J. E.
Field, R. F.
Filgate, J. T.
Finch, J. L.
Finch, W. G. H.
Findley, L. K.
Findley, P. B.
Fink, D. G.
Fisher, G. R.
Fisher, S. T.
Fishman, S.
Fitch, W. A.
Flannagan, C.
Fletcher, E. S.
Florez, H.
Flynn, R. M.
Forbes, A. C.
Forbes, H. C.
Ford, W. A.
Forsyth, P. G.
Foster, D. E.
Fowler, N. B.
Fox, A. G.
Fox, R. A.
Frankel, S.
Franklin, J. C.
Franks, C. J.
Frazier, H. S.
Freeman, E. E.
Freeman, R. L.
French, B. V. K.
Freundlich, M. M.
Friend, A. W.
Friend, H. H.
Friis, R. W.
Frink, O., Jr.
Fruth, H. F.
Fultz, M. E.
Fyler, G. W.

G

Gabler, R. T.
Gainsborough, G. F.
Gannett, D. K.
Gardiner, P. C.
Garrison, M. M.
Garstang, W. W.
Gates, H. A.
Gawler, H. C.
Gebhard, L. A.
Geiger, D. G.
Gellerup, D. W.
George, E. E.
George, R. W.
Gerks, I. H.
Gessford, R. K.
Ghirardi, A. A.
Giannini, G. M.
Gibson, W. T.
Giese, R. C.
Gilbert, W. E.
Gillies, J. H.
Girard, E. J.
Glasgow, R. S.
Glauber, J. J.
Gleason, H. H.
Gleason, R. J.
Glover, R. P.
Gluyas, T. M., Jr.
Goldberg, H.
Goldman, S.
Goodall, W. McH.
Goodwin, W. N., Jr.
Gove, E. L.
Graf, A. W.
Graham, B.
Graner, L. P.
Gray, T. S.
Green, E. I.
Grieg, D. D.
Grierson, C. A. W.
Griffiths, H. V.
Griffiths, W. H. F.
Grignon, L. D.
Grimditch, W. H.
Gross, G. C.
Grosselfinger, W. H.
Grossman, H.
Grover, F. W.
Grover, H. G.
Gubin, S.
Guild, B.
Gunther, F. A.
Gunzbourg, P. M.
Gurewitsch, A. M.
Guthrie, F. P.

H

Haeff, A. V.
Hahn, W. C.
Hailes, W. D.
Haines, D. G.
Hall, L. S.
Hall, W. M.
Haller, C. E.
Haller, G. L.
Hallman, L. B., Jr.
Halloran, A. H.
Halstead, W. S.
Hamberger, F., Jr.
Hammond, J. H., Jr.
Hammond, J. W.
Hancock, G. N.
Hanna, C. R.
Hanscom, W. W.
Hansen, E. H.
Hardwick, A. H.
Harmon, R. N.
Harries, J. H. O.
Harris, C. C.
Harrison, A. E.
Hartig, H. E.
Harvey, H.
Haskins, R. L.
Hassel, K. E.
Hastings, T. M., Jr.
Hathaway, D. L.
Hauck, V. D.
Hayes, H. D.
Headrick, L. B.
Heath, F. J.
Heaton-Armstrong, L. J.
Hector, L. G.
Heindel, H. J.
Heiser, E. S.
Heller, J. I.
Henderson, J. P.
Henderson, M. C.
Henderson, R. A.
Hendricks, L. A.
Henry, T. J.
Herber, J. C.
Herbst, P. J.
Herbstreit, J. W.
Herndon, L. C.
Herold, E. W.
Herrick, R. H.
Herrnfeld, F. P.
Hershberger, W. D.
Hershey, L. M.
Hershman, J. B.
Hickman, R. W.
Hicks, C. W.
Hickson, P. W.
Higgy, R. C.
Hight, S. C.
Hiller, H. E.
Hilliard, J. K.
Hirlinger, J. F.
Hirsch, C. J.
Hitchcock, R. C.
Hoadley, G. B.
Hoag, J. B.
Hoard, G. L.
Hobbs, M.
Hodges, A. R.
Hoffman, E. J.
Hoffman, R. R.
Hoffman, R. B.
Hogencamp, H. C.
Hogg, W. S.
Holland, L. M.
Hollis, H. H.
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Hollywood, J. M.
Holmes, R. S.
Holt, A. C.
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Homer, E. C.
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Hood, J. T.
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Hotopp, A. H., Jr.
Houck, H. W.
Hovgaard, O. M.
Howard, E. J.
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Howell, W. J.
Howes, F. S.
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Hudack, J. M.
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I

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Kishpaugh, A. W.
Kitchin, H. W.
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Klipsch, P. W.
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Knipp, A. R.
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Kock, W. E.
Koehler, G.
Kohl, W. H.
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Kolo, R. E.
Kolster, C. C.
Korman, N. I.
Kraemer, G. S.
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Vennes, H. J.

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Wagner, W. J.
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Z

Zender, R. G.
Ziegler, M.

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(As of August 15, 1945)

THE following list gives in alphabetical order the names of all members, except those of Student grade, as of August 15, 1945. The data given for each member have been corrected to January 1, 1946.

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ZWASKA, JOHN F. (S'41–A'43), Ensign, S(A)T, U.S. Naval Reserve, Box 8, Project Baker, N.A.S., Banana River, Fla.

ZWICK, GEORGE (S'40–A'41), 62 Leroy St., New York, N.Y.

ZWORYKIN, VLADIMIR K. (M'30–F'38), Associate Research Director, RCA Laboratories, Princeton, N.J.

ZYGMUNT, HENRY J. (A'40), 201 Talbot Ave., Braddock, Pa.

GEOGRAPHICAL LISTING OF MEMBERSHIP

(As of August 15, 1945)

The following list gives in geographical order the names of all members, except those of Student grade, as of August 15, 1945. The data for each member have been corrected to January 1, 1946.

UNITED STATES

ALABAMA

Birmingham
Bell, J. C. (A)

Chickasaw
Rainey, G. W. (VA)

Mobile
Andrews, E. W. (A)
Fulton, J. A., Jr. (A)
Goodloe, R. R. (A)
Lechman, O. (VA)
Stelzenmuller, G. V., Jr. (A)

Tarrant
Bomar, L. C. (A)

Tuscaloosa
Todd, T. H. (A)

Tuskegee Institute
Curtis, W. C. (A)
Webb, H. E., Jr. (A)

West Blocton
Davie, M. C., Jr. (A)

ARIZONA

Camp Wood
Merritt, C. H. (A)

Kingman
Wallace, P. H. (A)

Mesa
Ham, N. C. (A)

Nogales
Campoy, H. M. (A)

Phoenix
Carter, D. F. (A)
Cottrell, B. P. (A)
Hoff, A. H. (A)
Jones, R. F. (A)
Mosher, H. C. (A)
Stone, D. F. (A)
Young, P. G. (A)

Safford
Hartman, H. (A)

Tucson
Garlick, R. D. (A)
Jones, W. G. (A)

Winslow
Adelfson, N. O. (A)

ARKANSAS

Fayetteville
Boswell, J. R. (VA)
Leonard, C. G. (A)
Randolph, J. P. (A)

Harrison
Watkins, L. C., Jr. (A)

Hope
Klipsch, P. W. (SM)

Judsonia
Nelson, A. E. (A)

Little Rock
Bray, J. W. (A)
Harvey, G. L. (A)

Malvern
Summers, G. C. (A)

Prescott
Scott, G. H. (A)

Siloam Springs
Maxwell, K. D. (A)
Whaley, S. H. (A)

CALIFORNIA

Alameda
Carter, R. E. (A)
Comer, W. C. (A)
De Vries, R. T. (A)
Gainer, W. P. (VA)
McNulty, J. W. (A)
Polk, L. O. (A)
Shearer, R. W. (A)

Albany
Hartke, D. C. (A)
Sorensen, E. G. (M)
West, L. (A)

Alhambra
Bowler, G. E. (M)
Cary, H. H. (A)
Goeppinger, A. L. (M)
Lipscomb, T. E. (VA)
Margolin S. I. (A)
Mueller, F. W. (A)

Altadena
Braun, V. J. (M)
Dorman, C. H. (A)
Hall, S., III (A)
Johnson, P. F. (SM)
O'Connor, A. P. (A)

Alturas
Euler, K. C. (A)

Anaheim
Hopkins, E. L. (A)
Tokar, W. G. (VA)

Angwin
Gray, K. B. (A)

Arcadia
Babeaux, A. G. (A)
Johns, R. R. (A)
Jones, J. G. (VA)
Poore, R. D. (A)

Arcata
Strople, E. P. (A)

Azusa
Thomson, B., Jr. (A)

Bakersfield
Clement, P. F. (VA)
Kirk, H. E. (A)
Poston, W. L. (A)
Russell, J. H. (A)
Shatto, L. E. (A)
Vernon, R. W. (A)
Whiting, W. E. (M)

Balboa Island
Hansen, E. H. (SM)

Banning
Sampson, R. T. (A)

Bellflower
Adcock, R. G., Jr. (A)
Kahn, R. H. (A)
Sievers, W. C. (A)

Bell Gardens
Walker, P. E. (A)

Belmont
Hardenbergh, R. H. (A)
Hulstede, G. E. (A)
Hyne, A. D. (A)
Shoemaker, W. J. (A)

Berkeley
Balter, I. (A)
Bonner, H. W. (A)
Brace, F. R. (M)
Bright, H. S. (A)
Campbell, B. K. (A)
Cattell, G. W. (VA)
Chromy, B. J. (VA)
Clapp, F. D. (M)
Davis, D. D. (VA)
Dayton, D. M. (A)
Elsken, R. H. (A)
Farly, G. M. (VA)
Farnsworth, H. D. (VA)
Fass, S. J. (VA)
Freeman, E. D. (A)
Frost, A. H. (A)
Gardner, E. M. (A)
Hallikainen, K. E. (VA)
Hannaford, J. C. (A)
Hartzell, A. J., Jr. (A)
Haubrock, F. W. (A)
Heath, H. R. (A)
Jamieson, H. W. (M)
Johnson, R. W. (M)
Jones, F. C. (VA)
Jones, R. W. (A)
Kettinger, L. H. (A)
Krasik, S. (A)
Lindblom, R. O. (A)
Lindheim, S. (A)
Linton, R. L., Jr. (A)
Maeshner, E. E. A. (A)
McKinney, L. F. (A)
Mee, R. W. (A)
Mills, W. T., Jr. (A)
Morton, P. L. (SM)
Mozley, R. F. (A)
Nash, F. M. (A)
Ogg, R. D. (A)
Possner, L. (A)
Relf, K. E. (A)
Reukema, L. E. (VA)
Ritter, T. H. (A)
Scott, H. J. (SM)
Sedon, P. H. (A)
Selsted, W. T. (A)
Shuey, R. L. (A)
Sleeper, G. E., Jr. (VA)
Taylor, L. A. (A)
Thompson, R. L. (A)
Thuis, D. L. (A)
Tonjes, V. H. (M)
Toulis, W. J. (A)
Waddell, J. F. (A)
Ward, O. C. (A)
White, M. J. (A)
Whiting, G. W. (A)

Beverly Hills
Barnett, A. H. (A)
Halstead, C. (A)
Meadows, E. A. (A)
Peters, S. J. (A)
Torian, R. B. (A)
Winchell, R. W. (A)

Bishop
Rudolph, E. G. (VA)

Bolinas
Mueller, E. H. (A)
Volberg, F. J. (A)

Burbank
Annis, T. M. (A)
Bennett, P. L. (M)
Brockway, D. C. (VA)
Cannon, D. W. (A)
Caranchini, S. A. (A)
Crabb, R. C. (A)
Davis, A. C. (M)
Dooley, P. (VA)
Everett, F. A. M. (VA)
Hargens, C. W. (A)
Jackson, R. S. (A)
Lloyd, A. T. (A)
Martin, V. G. (SM)
McCleery, J. J. (A)
McHolland, C. L. (A)
Montgomery, T. J. (A)
Mussen, K. R. (A)
Parker, A. T. (M)
Robinett, D. B. (A)
Shrader, V. L. (A)
Vavra, P. H. (A)
Wainwright, S. F. (A)
Warne, V. J. (VA)
Weatherford, R. V. (A)
Worthen, W. L. (A)
Younger, U. E. (A)

Burlingame
Castle, L. B. (A)
Dowling, R. H. (A)
Frey, R. C. (VA)
Pottberg, W. J. (A)

Calistoga
Clark, C. B. (A)

Canoga Park
Ericson, H. L. (A)
Peterson, M. C. (A)

Carlsbad
Hogg, W. S. (SM)

Chico
Mauldin, C. W. (A)

Chula Vista
Burns, L. F. (A)
Curtis, L. R. (A)
Taylor, G. E. (A)
Voss, H. R. (A)
Yager, J. C. (A)

Clearwater
Julien, I. F. (SM)

Compton
Frankart, W. F. (A)
Hodgson, R. W. (A)

Concord
Dewey, O. L. (A)

Coronado
Christensen, R. J. (M)
Garard, E. A. (VA)
Kempton, W. D. (A)

Corte Madera
Weddell, H. W. (A)

Covina
Clark, J. H. (SM)
Finch, T. L. (A)

Culver City
Allen, B. G. (A)
Burns, G. A. (VA)
Guptill, H. R. (A)
Roberts, C. E. (A)

Cupertino
Gillmeister, F. W. (VA)

Daly City
Agnew, W. B. R. (A)

Dana Point
Young, H. A. (A)

Davis
Berger, W. E. (VA)

Delano
Russell, J. D., Jr. (A)

Dixon
Dietsch, C. G. (VA)
Love, B. E. (VA)
Martin, N. A. (A)

Eagle Rock
Anderson, R. T. (A)

East Del Paso Heights
Smart, M. E. (A)

East Los Angeles
Bechtold, I. C. (A)

El Cajon
Pyle, R. V. (A)

El Centro
Conner, R. E. (A)
Kellogg, S. R. (A)
Young, C. W. (A)

El Cerrito
Anson, C. T. (VA)
Hill, O. (A)
Thompson, G. L. (A)

El Monte
Hayes, E. A. (VA)

Encino
Chesney, A. P. (SM)

Eureka
Olson, A. E. (A)
Smullin, W. B. (A)
Stach, R. W. (A)

Fort Jones
Fowler, J. A. B. (A)

Fresno
Brown, H. R. (A)
Marshall, E. E. (A)
Martin, R. A. (A)
Schuler, R. M. (A)
Simpson, H. J. (VA)
Teeter, C. E. (A)
Thurston, M. O. (A)
Williams, J. S. (A)

Gardena
Beach, O. R. (A)
Kidd, T. L. (A)

Glendale
Adams, R. P. (A)
Freck, R. H. (A)
Herman, J. B. (A)
Kennedy, M. E. (A)
Koerner, C. T. (VA)
Madsen, R. G. (M)
Morecroft, J. H., Jr. (SM)
Newcomb, R. D. (VA)
Nielsen, J. J., Jr. (A)
Richey, F. R. (A)
Welke, P. L. (A)

Half Moon Bay
Watkins, J. O. (VA)

Hamilton Field
Hofford, J. F. (A)

Hanford
Hornsby, P. L. (A)

Hawthorne
Butler, A. G. (VA)

Heber
Majors, V. R. (A)

Hermosa Beach
Roland, L. F. (A)

Hollywood
Aboussleman, W. C. (SM)
Baba, A. (A)
Barkley, H. F. (VA)
Bowman, L. H. (M)
Braddy, J. A. (A)
Culley, L. D. (VA)
Dean, J. P. (A)
Denechaud, R. G. (VA)
Dishington, R. H. (A)
Durham, G. E. (A)
Filizola, V. F. (A)
Goodwin, P. S. (M)
Heineman, J. T. (VA)
Lubcke, H. R. (SM)
McCulloch, C. R. (A)
Miller, G. B. (VA)
Moore, M. E. (VA)
Moore, R. M. (VA)
Parker, A. B. (A)
Rabinoff, C. V. (A)
Radmacher, D. S. (M)
Reed, J. C. (A)
Rudicil, G. M. (A)
Sawyer, G. E. (VA)
Saxton, A. H. (A)
Smith, E. E. (M)
Spearman, E. L., Jr. (A)
Stark, H. P. (A)
Stoddart, R. R. (SM)
Taschner, V. M. (A)
Wells, W. B. (VA)
Willey, L. E. (M)
Withers, W. A. (A)
Wolbrecht, M. E. (A)
Wolfe, H. (M)

Huntington Park
Allen, R. M. (A)
Grigg, J. W. (VA)
Sandiford, P. L., Jr. (A)

Imperial Beach
Underwood, E. G. (VA)

Inglewood
Flynn, F. J. (A)
Howard, L. W. (VA)
Pike, B. W. (M)
Schwank, R. H. (A)
Wells, W. W. (A)
Wick, O. F. (A)

Inverness
Moorhead, G. H. (VA)

Inyokern
Allen, R. B. (A)
Ashbrook, F. M. (M)
Coe, J. C. (VA)
Kirkpatrick, E. L. (A)

Irvington
Reinartz, J. L. (SM)

Jackson
Snyder, W. G. (VA)
Van Thiel, J. (VA)

La Canada
Larter, T. C., Jr. (A)

La Crescenta
Radius, C. (SM)
Roughton, E. R. (A)

La Jolla
Bryan, H. E. (A)
Coleman, G. M. (A)
Marriner, E. H. (A)
Tidmarsh, G. P. (A)
Wells, T. H. (A)

La Mesa
Fiedler, G. J. (A)
Grumbein, P., Jr. (VA)
Leonard, J. L. (A)
Macy, S. A. (VA)

Larkspur
Cherry, C. E. (VA)

Lawndale
Bullock, W. W. (M)
Wolfe, C. M. (VA)

Le Grand
Dempsey, R. H. (A)

Lodi
Kurz, A. A. (A)
Lerza, F. F. (VA)

Long Beach
Anderson, J. S. (VA)
Colburn, O. E. (A)
Crossley, R. C. (A)
Farrand, C. E. (A)
Goble, R. W. (A)
Kurthy, J. P. (A)
Levis, O. C., Jr. (A)
Masin, G. F. (A)
Murphy, S. A. (A)
Mutter, A. A. (A)
Oakley, R. (A)
Petersen, E. L. (M)
Phelps, J. M. (A)
Robinson, E. B. (VA)
Sternke, E. C. (A)
Tapp, J. E. (M)
Wallace, D. C. (VA)
Williams, M. A. (A)
Wilson, D. F. (A)

Los Altos
Miller, H. C. (VA)
Stafford, C. I. (A)

Los Angeles
Abraham, W. G. (A)
Alagna, G. I. (A)
Alvord, L. H. (A)
Anderson, R. I. (A)
Arne, R. E. (A)
Astorga, L. T. (VA)
Barnard, R. E. (A)
Barron, B. (A)
Beckstead, D. L. (A)
Benton, A. (A)
Beranek, J. A. (A)
Berman, I. (A)
Bersbach, A. J. (A)
Blackman, B. G. (A)
Boyd, J. C. (A)
Breeden, W. (A)
Brittain, L. B. (A)
Brockway, W. W. (VA)
Brown, J. K. (A)
Brubaker, G. P., Jr. (A)
Bryan, W. J. (VA)
Bucknell, W. H. (VA)
Bullock, R. E. (A)
Carpenter, R. E. (A)
Chase, N. C. (A)
Coblentz, O. R. (VA)
Cole, F. H. (VA)
Comegys, C. W., Jr. (A)
Conner, R. W. (A)
Cook, R. O. (VA)
Cornell, L. L. (A)
Crawford, W. M. (A)
Cross, L. W. (A)
Crozer, W. A. (A)
Cunningham, E. W. (VA)
Curran, G. W. (SM)
Cutler, S. (A)
Daily, C. R. (VA)
Dawley, R. L. (A)
Deen, J. R. (A)
De Forest, L. (F)
Deltour, B. (A)
Dempster, B. (M)
Denney, B. H. (A)
Denton, T., Jr. (A)
Dye, R. C. (A)
Eckard, P. E. (A)
Edgerton, A. K. (A)
Ellsworth, A. R. (A)
Espy, D. (M)
Estep, C. R. (VA)
Evans, H. C. (A)
Fischer, B. (A)
Fiske, J. J. (A)
Flagg, R. M. (A)
Fodor, F. H. (VA)
Foulon, F. (A)
Frank-Jones, G. (A)
Frear, G. C. (A)
Freitag, W. O. (M)
Friedman, H. (A)
Funderburg, J. (A)
Gagian, A. (A)
Gaubeca, J. B. (A)
Gladmon, E. (A)
Glovitsky, S. V. (M)
Goldberg, L. J. (A)
Golden, D. R. (A)
Gorton, G. D. (A)
Gunderson, M. F. (A)
Gunning, W. F. (A)
Guttman, N. X. (A)
Hall, E. C. (A)
Handley, W. H. (A)
Hare, R. J. (VA)
Harmon, W. S. (VA)
Hart, T. J. (A)
Hartwick, F. C. (VA)
Haylock, F. B. (A)
Henry, D. S. (A)
Herrnfeld, F. P. (SM)
Hindin, M. J. (A)
Hodge, J. (A)
Holmes, P. J. (A)
Hom, F. M. (A)
Hornickel, H. C. (A)
Horton, D. K. (A)
Huffine, L. L. (A)
Hughes, E. N. (A)
Hughes, H. M. (A)
Ireland, F. (SM)
Jacobs, W. T. (A)
Jaeger, C. H. (A)
Jamison, J. W., Jr. (A)
Johnson, R. M. W. (M)
Karaki, L. C. (A)
Kennedy, F. M. (SM)
Kenney, W. W. (A)
Kinnell, P. (A)
Klein, W. S. (M)
Kluge, M. E. (A)
Knowlton, C. S. (A)
Koury, E. J. (A)
Krantz, C. H. (VA)
Kritzmire, A. D. (A)
Kwan, H. W. (A)
Lew, H. W. (A)
Lindsay, W. W., Jr. (F)
Linton, T. B. (A)
Lipman, C. E. (A)
Lockard, R. E., Jr. (A)
Lyons, B. P. (A)
Manderfeld, E. C. (SM)
Marshall, G. E. (A)
Mason, G. D. (A)
McClanahan, R. T. (A)
McFarlane, M. D. (SM)
McKenzie, D. S. (A)
McNair, R. W. (A)
Meader, H. W. (A)
Meigs, J. R. (A)
Meikle, J. F. (A)
Menkin, J. I. (A)
Metcalf, D. E. (VA)
Miller, B. F. (SM)
Miller, F. A. (A)
Miller, G. R. (A)
Miller, R. J. (A)
Miller, W. B. (A)
Moss, J. F. (A)
Mueller, W. A. (VA)
Murtough, W. L. (A)
Neelands, R. (A)
Neely, N. B. (A)
Nelson, A. L. (SM)
Neuron, E. (A)
Newman, C. (A)
Nunan, J. K. (A)
Ogg, G. R. (VA)
Olson, C. O. (A)
Olson, C. P., Jr. (A)
Osborne, W. E. (A)
Overbey, C. O. (A)
Partridge, A. J. (VA)
Pastor, C. C. (A)
Paul, B. (VA)
Pfeifer, R. (A)
Pierce, C. G. (M)
Praschan, V. E. (A)
Raleigh, J. H. (A)
Ramo, S. (SM)
Raymond, E. (A)
Rhoads, J. A. (A)
Richards, W. S. (VA)
Robyn, A. (A)
Rogers, G. L. (A)
Rogers, T. G. (A)
Rowberg, A. F. (A)
Rubel, J. H. (A)
Runnells, T. R. (A)
Sather, R. O. (A)
Savage, J. W. (A)
Schick, H. G. (M)
Schreiber, E. H. (SM)
Scoville, R. R. (SM)
Selleck, R. S. (A)
Seltzer, L. J. (A)
Shaw, R. G. (A)
Sherburne, C. J. (M)
Shilzony, F. N. (A)
Shuler, M. H. (A)
Sievers, E. S. (VA)
Silent, H. C. (VA)
Silk, N. R. (A)
Sill, K. B. (A)
Simonton, R. C. (A)
Slyfield, C. O. (VA)
Smith, C. J. (VA)
Smith, C. L. (A)
Smith, H. A. (VA)
Smith, J. L. (A)
Smith, M. C. (A)
Sollars, R. C. (A)
Soong, H. S. (A)
Stafford, J. W. (M)
Stanton, I. W. (A)
Stein, H. M. (A)
Stenger, F. J. (M)
Stewart, A. A. (A)
Stewart, R. W. (A)
Sumner, E. M. (A)
Swanson, E. R. (A)
Taylor, H. V. S. (A)
Taylor, J. L., Jr. (VA)
Teeuw, J. W. (A)
Thomsen, P. H. (SM)
Tucker, V. L. (A)
Turner, W. (A)
Tustin, W. (A)
Tuttle, J. M. (A)
Uecke, E. H. (A)
Utterback, W. I., Jr. (A)
Valle, B. E. (A)
Van Groos, J. C. (A)
Van Leeuwen, E. G. (A)
Vollintine, K. R. (A)
Walley, B. (VA)
Weaver, C. E. (VA)
Wersen, D. T. (VA)
West, L. E. (SM)
Wiener, N. (A)
Wight, R. W. (A)
Wilson, W. A. (A)
Winkler, J. L. (A)
Wolcott, C. F. (SM)
Wood, G. (A)
Woodward, E. O. (A)
Wright, P. B. (A)
Wyland, G. P. (A)
Young, C. R. (A)

Los Gatos
Bramley, N. V. (A)
Lewis, G. W. (A)
MacDonald, W. L. (A)
Shaw, M. (A)

Lynwood
Breeding, C. S. (A)
Gerken, G. H. (M)

Manhattan Beach
Birkenhead, W. D. (A)
Boyer, J. M. (A)

Martinez
Moore, K. A. (M)

Marysville
Weis, W. G. (A)

Maywood
Hansen, H. R. (A)

Menlo Park
Edwards, R. M. (A)
Matteson, D. C. (A)
Ryland, B. G. (A)
Sphar, C. H. (VA)
Stevens, J. S. (A)

Millbrae
McCullough, J. A. (A)

Mill Valley
Behringer, D. S. (VA)
Smith, H. H. (A)
Wilson, J. H. (A)

Modesto
Bates, W. H., Jr. (VA)
Huggins, R. A. (A)

Moffett Field
Wortman, J. W. (A)

Monrovia
Pugh, L. R. (A)
Thompson, W. M. (A)

Monterey
Wright, O. N. (A)

Monterey Park
Bacon, W. L. (A)

Montrose
Brokaw, H. R. (A)
Christilaw, J. S. (A)
Jensen, A. K. (M)

Moraga
Tibbetts, D. R. (VA)

Mountain View
Maccono, F. J. (VA)

Napa
Streich, R. J. (VA)

National City
Brown, L. L. (A)
Cronkhite, C. L. (A)

North Hollywood
Anderson, G. R. (A)
Baumeister, E. M. (A)
Coe, E. W. (A)
Crow, J. R. (A)
Erdman, D. C. (A)
French, J. B. (VA)
Gove, E. L. (SM)
Jensen, K. K. (M)
Kelsey, A. L. (A)
McCoy, D. R. (A)
Moody, R. C. (SM)
Moon, R. B. (A)
Overmire, M. O. (A)
Parker, W. H., Jr. (VA)
Price, W. H. (A)
Schmitz, M. W. (A)
Shultz, E. P. (VA)
Wilson, F. R. (A)

North Sacramento
Webster, N. D. (VA)

Oakland
Albrecht, J. F. (A)
Andresen, S. (VA)
Behr, F. J. (F)
Bigley, D. L. (A)
Black, L. J. (VA)
Celestre, R. G. (A)
Dana, J. J. (A)
Downey, C. E. (A)
Ferry, T. R. (A)
Forster, A. G. (VA)
Ganic, I. R. (A)
Gibson, H. D. (VA)
Gilbert, R. M. (VA)
Glessner, J. M. (VA)
Hansen, H. W. (A)
Holman, W. A. (A)
Kellogg, W. D. (VA)
Kinard, J. M., Jr. (A)
Lamplugh, E. L. (A)
Larrieu, E. A., Jr. (M)
Lasky, P. G. (A)
Lee, L. K. (A)
Manov, F. S. (A)
Martin, J. B. (A)
Morrison, K. G. (M)
Pantchechnikoff, J. I. (A)
Pattison, A. (A)
Paul, G. S. (VA)
Pelonio, A. J. (A)
Porep, J. L. (A)
Reedy, C. W. (M)
Reynolds, R. K. (A)
Schwemin, A. J. (A)
Taylor, R. L. (VA)
Thunen, G. W. (A)
Wahlgren, W. W. (A)
Whitty, V. E. (A)
Wunce, R. J. (A)
Zumsteg, H. O. (A)

Oceanside
Miller, E. M. (A)
Ulmer, H. W. (A)

Ontario
Ritter, E. (A)

Orange
Evans, N. O. (A)

Orinda
Buckingham, E. (M)

Pacific Palisades
O'Brien, F. B. (A)

Palo Alto
Amsler, E. F. (A)
Barclay, W. J. (A)
Barton, S. N. (VA)
Bauer, B. (VA)
Brinton, R. L. (A)
Burkhard, F. J. (A)
Carson, V. S. (A)
Christensen, P. C. (A)
Fisher, G. R. (SM)
Fuller, L. F. (F)
Girdner, W. I. (A)
Helliwell, R. A. (A)
Helwig, N. C. (A)
Hewlett, W. R. (VA)
Kaar, J. M. (VA)
Kennedy, R. C. (A)
Liao, T. W. (A)
Mahurin, C. (A)
Nishino, H. H. (A)
Packard, D. (A)
Packard, M. E. (A)
Roney, E. L. (A)
Schrock, N. B. (A)
Scott, D. R. (A)
Shultise, Q. M. (M)
Sink, R. L. (A)
Swain, J. R. (A)
Tinney, F. B. (VA)
Turner, T. F. (A)
Villard, O. G., Jr. (A)
Wedel, J. J., Jr. (A)
Woods, C. W. (A)

Pasadena
Benioff, H. (VA)
Blasier, H. E. (VA)
Blatterman, H. L. (A)
Briggs, V. R. (A)
Butler, W. W. (A)
Cannon, G. R. (A)
Davis, R. R. (A)
Donoghue, J. J. (A)
Downs, G. W., Jr. (SM)
Dwyer, R. J. (VA)
Ellis, D. D., Jr. (A)
Giannini, G. M. (SM)
Gilbert, J. A. (A)
Goeppinger, A. L. (M)
Gow, K. P. (A)
Granger, W. E. (A)
Grigg, R. W. (A)
Grove, H. G. (A)
Harden, P. A. (A)
Hawley, P. F. (A)
Hodson, W. G. (A)
Hopkins, R. E. (VA)
Hopper, F. L. (SM)
Howes, E. T. (VA)
Hull, R. W. (VA)
Irwin, E. M. (A)
Kimball, R. (A)
Macik, F. (A)
Mac Keown, S. S. (F)
Marshall, J. W. (A)
Marshall, R. (A)
Mattson, E. (A)
McDaniel, G. W. (A)
Miller, C. E. (A)
Moran, R. B., Jr. (A)
Morgan, M. G. (A)
Nikirk, T. E. (VA)
Peoples, J. E. (A)
Pickering, W. H. (A)
Poole, J. H. (VA)
Ruebhausen, V. (A)
Rutland, D. F. (A)
Schwartz, E. D. (A)
Seiler, R. C. (A)
Sepmeyer, L. W. (SM)
Simmons, E., Jr. (VA)
Slavin, M. (A)
Snowdon, S. C. (A)
Spaulding, C. P. (A)
Tejada, L. H. (A)
Walker, W. F. (A)
Washburn, H. W. (VA)

Pescadero
Garrison, W. H. (A)

Petaluma
Nielsen, G. A. (A)

Pico
Reynolds, R. R. (A)

Piedmont
Evans, C. P. (A)
Hudson, I. (A)

Playa Del Rey
Woods, W. A. (VA)

Pleasanton
Bairos, C. A. (A)

Point Reyes
Reid, I. H. (VA)

Pomona
Ellis, G. M. (A)

Portola
Sherman, W. L. (A)

Redwood City
Brewer, M. S. (VA)
Combs, E. C. (A)
Gates, B. (A)
Gordon, J. P. (A)
Litton, C. V. (SM)
Pack, H. G. (A)
Raffensperger, M. J. (A)
Romander, H. (VA)
Stahl, R. J. (A)
Stockton, L. W. (A)
Stoner, J. W. (A)
Straney, K. O. (A)

Richmond
Bowman, L. H. (A)
Bundrick, R. J. (A)
Holtmann, E. H. (A)
Jacobs, H. N. (M)
Lowe, C., Jr. (VA)
Mann, D. O. (A)
Nichols, P. A. (A)
Rossi, G. B. (A)
Watson, H. M. (M)

Rivera
Shade, R. R. (A)

Riverside
Lark, E. J. (A)
McCormick, E. M. (A)
Parker, C. N. (A)

Roscoe
McGarry, J. (VA)
Winchel, H. T. (VA)

Rosemead
Ferl, R. H. (A)

Sacramento
Arnold, T. E. (VA)
Barnes, G. W. (VA)
Bettencourt, V. S. (A)
Broderson, L. V. (A)
Callaway, W. S. (A)
Carmin, M. H. (A)
Holme, W. M. (A)
Hoskins, R. E. (A)
Mason, C. F. (A)
Miller, J. R. (VA)
Miller, R. H., Jr. (A)
Naschke, E. S. (VA)
Oates, T. L. (VA)
Shaw, G. W. (A)

Salinas
Peck, S. M. (A)

San Anselmo
Walsh, C. E. (VA)

San Bernardino
Emm, T. T. (A)
Ewing, G. W. (A)
Harris, L. F. (A)
Mefford, M. E. (A)
Pettit, H. L. (A)
Ryan, E. L. (A)
Verbance, A. (A)

San Bruno
Bullard, R. W. (A)
Coover, C. C. (A)
Hykal, F. A. (A)
Lebedeff, G. M. (VA)

San Carlos
Banks, T. G., Jr. (A)
Brown, E. L. (M)
Byrne, P. F. (VA)
Procter, E. N. (A)
Soderquist, C. J. (VA)

San Diego
Abel, C. F. (A)
Abramis, B. D. (A)
Allen, R. B. (A)
Barnes, T. (A)
Becklund, O. A. (M)
Berlin, W. H. V. (A)
Bowers, R. W. (VA)
Brackett, R. T. (A)
Bradford, C. E. (A)
Breitwieser, C. J. (VA)
Brooks, J. L. (A)
Burnett, W. W. L. (M)
Burton, K. M. (A)
Cary, R. J., Jr. (A)
Clark, W. E. (A)
Collins, W. G. (A)
Curtis, G. H. (A)
Dingley, E. N., Jr. (SM)
Doig, J. H. (VA)
Donahue, W. J. (A)
Dopkowski, W. J. (A)
Doyle, W. T. (A)
Ely, R. L., Jr. (A)
Fisher, L. C. (A)
Fisk, R. E. (A)
Franklin, R. A. (A)
Fraser, C. H. (A)
Fredricks, J. E. (VA)
Freedman, S. (M)
Gates, H. P., Jr. (A)
Geren, K. E. (A)
Gjelhaug, J. A. (A)
Glore, J. N. (A)
Grodzinsky, S. (A)
Haig, H. C., Jr. (A)
Hasenbeck, H. W. (A)
Henderson, A. L. (A)
Hopkins, R. U. F. (A)
Isenberg, W. W. (A)
Jacoby, J. (A)
Kalbfell, D. C. (SM)
Keeran, R. V. (A)
Kiernan, E. F. (VA)
Klaus, G. H. (A)
Labby, D. M. (M)
Langham, J. R. (M)
Lauritzen, I. L. (A)
Lawsine, L. (M)
La Zelle, L. L. (A)
Lewis, G. E. (A)
Linhart, T., Jr. (A)
McBride, A. C., Jr. (VA)
McFadden, R. R. (A)
Milton, V. A. (A)
Moore, W. B. (A)
Nicholas, J. C. (A)
Ovitt, M. D. (A)
Parkhurst, D. D. (A)
Patterson, G. D. (A)
Penners, B. A. (M)
Rich, A. P. (A)
Scott, J. E., Jr. (M)
Searl, M. F. (A)
Sessions, S. H. (VA)
Shipley, W. W., Jr. (A)
Smith, E. W. (A)
Smith, H. K. (A)
Smith, J. R., Jr. (A)
Squibb, W. F. (VA)
Steppler, R. V. (A)
Strong, J. A. (A)
Tibbals, L. (VA)
Tirrell, C. W. (A)
Trim, D. P. (A)
Trolese, L. G. (A)
Ward, B. G. (A)
Welge, V. (A)
Wilson, L. W. (A)
Woolfolk, E. W. (A)

San Francisco
Aaron, B. D. (A)
Ahlstrom, G. A. (A)
Alden, R. M. (A)
Allen, G. (A)
Anderson, A. G. (A)
Anderson, J. G. (A)
Angerbauer, G. J. (A)
Ashton, J. J. (A)
Backus, C. H. (VA)
Bailey, J. H. (VA)
Baldwin, B. S., Jr. (A)
Baldwin, R. S. (VA)
Barnes, C., Jr. (A)
Barnes, F. P. (M)
Bayer, S. (A)
Benson, F. S. (VA)
Bernard, J. T. (A)
Blank, P. (A)
Boese, W. C. (A)
Booth, H. A. (VA)
Bowman, J. Y. (A)
Bradley, J. A., Jr. (A)
Brooke, R. O. (A)
Brower, D. F. (A)
Brown, C. H. (A)
Bruner, M. L. (A)
Bullock, J. B. (A)
Bullock, J. M. (A)
Burke, J. O., Jr. (A)
Butler, R. E., Jr. (A)
Cannizzaro, M. (A)
Carmichael, H. C. (A)
Chasteen, J. W. (A)
Chow, B. (A)
Cleckley, J. T. (A)
Cohn, H. P. (A)
Cole, C. H. (VA)
Coleman, C. F. (A)
Cone, D. I. (VA)
Conlisk, R. L. (A)
Cooke, L. G. (A)
Crandall, W. E. (A)
Danielson, E. G. (VA)
Darlington, E. S. (SM)
Dea, E. F. (A)
Decker, S. M. (A)
Deutsch, K. T. (A)
Dolan, C. M. (A)
Dutton, I. L. (A)
Edge, L. L. (A)
Eckmann, L. G. (A)
Erickson, L. G. (A)
Faithorn, N. R. (VA)
Farrelle, P. S. (A)
Felix, E. H. (SM)
Fincutter, J. P. (A)
Freiermuth, V. J. (VA)
Gookin, K. A. (A)
Goulett, W. B. (VA)
Gray, T. R. (VA)
Greaves, V. F. (F)
Green, W. C. (VA)
Greves, G. L. (VA)
Griffith, B. D. (A)
Guasco, D. V. (A)
Gull, H. P. (A)
Hahn, J. H. (VA)
Halloran, A. H. (SM)
Hamilton, G. R. (A)
Hanscom, W. W. (SM)
Harpster, W. A. (A)
Hart, A. H. (VA)
Harton, P. L. (A)
Hatch, R. I. (VA)
Haus, R. (A)
Hay, R. R. (A)
Heeder, M. E. (A)
Heimlich, I. R. (A)
Held, H. E. (VA)
Henry, J. C. (A)
Henshaw, R. A. (A)
Heydenrych, J. C. R. (A)
Hilderbrand, E. A. (A)
Himes, R. H. (A)
Hixson, J. P. (A)
Hodes, I. (A)
Hodgson, C. R. (A)
Hoffer, J. M. (A)
Hogan, J. E. (A)
Horsley, G. E. (A)
Howard, R. D. (A)
Howard, R. V. (SM)
Hudek, V. R. (A)
Huppert, H. K. (A)
Hussey, W. J. (VA)
Jones, F. W. (A)
Jorgensen, R. E. (A)
Josephson, A. P. (A)
Kafafian, J. (A)
Kalb, H. N. (A)
Kamphoefner, F. J. (A)
Kastl, R. H. (A)
Kaufman, J. (SM)
Kees, A. A. (M)
Keller, J. E. (A)
Kelley, W. T. (A)
Kelsay, W. D. (A)
Kile, R. L. (A)
King, H. D. (A)
Kochenderfer, W. E. (A)
Kramer, J. F. (VA)
Lackey, B. B. (A)
Lamar, R. E. (A)
Landells, J. H. (A)
Langfelder, H. (A)
Lavielle, W. R. R. (VA)
Lawrence, M. J. (A)
Lee, F. B. (A)
Leicester, J. F., III (A)
Leonard, N. E. (A)
Lewis, M. T. (A)
Lichtenstein, R. M. (A)
Lindenberg, E. C. (A)
Liska, R. W. (M)
Lissauer, S. (A)
Loretz, H. G. (A)
Lynch, E., Jr. (A)
Lynch, H. S. (A)
Maass, C. E. (A)
Mac Leod, D. A. (A)
Maddox, C. H. (SM)
Maize, J. A. (A)
Matthews, R. W. (A)
Mauck, M. L. (A)
Mayer, A. L. (A)
McAfee, P. H., Jr. (A)
McArdle, J. J. (A)
McCarley, H. H. (A)
McCarty, I. H. (A)
McDowell, W. F. (A)
McGaughey, J. R. (A)
Melnicoe, S. A. (A)
Mentz, C. H. (A)
Mesak, C. (A)
Mills, M. H. (A)
Mirman, I. (A)
Misenheimer, H. N. (SM)
Mole, J. E. (A)
Monsees, A. M. (A)
Moody, A. W. (M)
Morrison, A. C. (VA)
Most, N. (M)
Muir, J. (A)
Munzer, L. F. (M)
Murphy, C. H. S. (A)
Naegle, M. A. (A)
Niblo, P. B. (A)
Nielsen, K. M. (A)
Nielsen, W. B. (A)
Nyberg, R. A. (A)
O'Neil, J. A. (A)
O'Neill, R. A. (VA)
Overacker, H. E. (A)
Patron, A. E. (A)
Petrak, J. R. (A)
Pettersen, P. L. (A)
Pichetto, P. B. (A)
Pinkney, J. L. (A)
Pockman, L. T. (A)
Radom, S. R. (A)
Richards, J. A. K. (A)
Robinson, J. A. (A)
Rogers, E. J. (A)
Romero, E. S. (A)
Rupprecht, F. C. (A)
Ryan, C. M. (A)
St. John, I. S. (A)
Sandfort, M. (VA)
Schaub, L. E. (A)
Scheuch, D. R. (A)
Schulz, P. C. (VA)
Schwarz, C. (A)
Scullin, F. B. (A)
Seidl, F. A. (A)
Seielstad, H. D. (SM)
Shedd, R. D. (A)
Sherman, W. K. (VA)
Sherr, J. B. (M)
Sichel, A. T. (VA)
Skinner, C. R. (VA)
Slavin, S. (VA)
Smith, C. W. (A)
Smith, H. L. (VA)
Smith, R. L. (A)
Snoddy, R. E. (A)
Stone, J. E. (A)
Surtees, F. R. (A)
Sweetland, R. N. (A)
Taylor, A. R. (VA)
Tenenbaum, F. (A)
Theuriet, L. A. (A)
Thienpont, M. C. (A)
Timperley, F. G. (A)
Tingley, E. M. (A)
Ung, E. L. (A)
Van Wart, J. (A)
Vitzelio, R. B. (A)
Vizanko, D. J. (A)
Von Bergen, C. A. (A)
Waddell, C. N. (A)
Walsh, W. C. (A)
Weiler, G. (A)
Wightman, E. E. (A)
Williams, J. F. (A)
Williams, P. A. (VA)
Williams, T. G. (A)
Wing, R. Y. (A)
Wojcik, B. M. (A)
Wong, H. F. (A)
Woodcock, A. J. (A)
Woolverton, R. B. (F)
Yuen, H. A. (A)

San Gabriel
Alverson, J. G. (M)
Hayami, F. Y. (A)
Jackson, C. L. (A)
Kenworth, W. (M)
Malneritch, J. J. (A)
Spargo, P. W. (A)

Sanger
Jones, C. H. (A)

San Jose
Clayton, J. B., Jr. (A)
Engwicht, H. (VA)
Gilleran, J. J., Jr. (A)
Hoehn, F. M. (A)
Kelliher, J. E. (VA)
Nelson, F. A. (A)
Perry, R. L. (A)
Quement, F. J. (VA)
Siegel, S. (A)
Stinson, M. C. (A)
Stuart, G. S. (A)
Van Pelt, D. L. (A)

San Juan Capistrano
Williams, C. (A)

San Leandro
Bidwell, H. H. (A)
Brodie, A. H. (VA)
Case, M. D. (VA)

San Luis Obispo
Travis, E. F. (A)

San Marino
Mason, C. W. (VA)

San Mateo
Barker, R. D. (A)
Eldred, W. N. (SM)
Ewell, J. H. (A)
Grace, J. R. (A)
Queen, W. H. (M)
Shermund, R. C. (SM)
Stauffer, R. W. (A)
Stone, D. L. (A)
Towne, A. E. (VA)

San Pedro
Adams, W. A. (A)
Johnson, V. L. (A)
Pierce, F. W. (VA)
Smith, J. L. (A)

San Rafael
Hamma, T. G. (VA)
Mitchell, J. R. (A)
Reinhart, H. E. (A)

Santa Ana
Bogue, H. B. (A)
Leipert, C. J. (A)
Levering, C. A. (VA)

Santa Barbara
Buckley, W. C. (A)
Down, M. A. (A)
Phillips, N. V. (VA)
Schnell, L. J. (VA)
Smith, D. S. (A)

Santa Cruz
De Witt, H. (A)
Kaufman, A. W. (VA)
Ottem, I. E. (A)

Santa Maria
Stampalia, J. T. (A)

Santa Monica
Brown, H. M. (A)
Cooper, J. H. (A)
Dine, F. E. (A)
Everest, F. A. (SM)
Frampton, M. W. (A)
Fry, B. L. (A)
Gaines, B. R. (VA)
Hund, A. (F)
Kouchnerkavich, T. A. (VA)
La Violette, R. F. (A)
McKinley, H. W. (VA)
Partis, G. (A)
Rarer, E. B. (A)
Teague, D. S., Jr. (A)
Trumbull, A. F. (A)

Santa Paula
Schlinger, W. R. (A)

Santa Rosa
Merrill, G. E. (A)

Saratoga
Kerber, S. M. (A)

Saticoy
Sharp, J. M. (VA)

Sausalito
De Witt, M. H. (A)

Seeley
Robinson, H. S. (A)

Selma
Smith, R. A. (A)

Sonoma
Mann, F. E. (A)
Simpson, R. L. (VA)

Sonora
Chase, R. C. (A)

South Gate
Evans, W. C. B. (A)

South Laguna
Sylvester, T. D. (A)

South Pasadena
Moore, R. M. (VA)
Pitzer, R. L. (A)
Silhavy, W. M. (A)

South San Francisco
Crapuchettes, P. W. (M)
Wells, F. D. (A)

Stanford University
Avis, A. J. A. (A)
Blanchard, H. P. (A)
Chapman, S. (A)
Floyd, W. B. (A)
Hansen, W. W. (A)
Hoover, W. G. (A)
Jeffries, C. D. (A)
Manning, L. A. (A)
Spangenberg, K. R. (SM)
Terman, F. E. (F)

Stockton
Greene, M. B. (A)
Hudson, F. E. (A)
Peters, E. F. (A)
Thym, A. M. (A)
Welch, H. E. (A)

Sunland
Hughes, W. R. (A)

Sunnyvale
Lingle, R. H., Jr. (A)

Temple City
Armagost, H. C. (VA)
Bowen, W. (A)
Weissmantel, F. A. (VA)

Terminal Island
McCaffrey, F. K. (A)

Terra Bella
McMaster, W. J. (A)

Torrance
Rovenstine, J. A. (A)

Treasure Island
Cohoon, B. C. (A)
Cummings, M. M. (A)
Dalrymple, I. N. (A)
Davidson, H. A. (A)
Hammersand, F. G. (A)
Hund, E. (A)
Jackson, W. H. (A)
Knipe, W. M. (A)
McLaughlin, W. F. (A)
Myers, A. L. (A)
Parks, L. W. (A)
Roberts, E. A. (A)

Tujunga
Holmes, L. O. (A)

Tulare
Anderson, S. W. (A)

Tustin
Reed, J. Z. (A)
Witten, A. L. (A)

Vallejo
Angst, D. C. (A)
Becker, H. W. (A)
Cooper, F. W. (A)
Dunklee, F. E. (A)
Ekstrand, P. A. (VA)
Hough, J. M. (A)
Pate, C. W. (A)
Payne, O. C. (A)
Winchester, R. E. (A)

Van Nuys
Blackmon, T. M. (A)
Klug, K. W. (A)
Morrison, H. G. (A)
Snyder, W. (A)
Sprague, G. M. (VA)
Wright, D. (VA)

Venice
Brownson, R. O. (A)
Bryan, F. E. (A)
Priest, W. F. (A)
Sampson, C. H. (A)

Ventura
Conly, E. R. (A)
Stuart, C. E. (A)

Victorville
Humphreville, T. N. (A)

Walnut Creek
Leslie, J. M., Jr. (A)

West Los Angeles
Albrecht, A. (A)
Hilliard, J. K. (SM)
Lockwood, S. M. (A)
Theodore, C. (A)
Wright, E. C. (M)

Whittier
Corcoran, G. L. (A)

Woodside
Eitel, W. W. (A)

COLORADO

Boulder
Brown, E. L. (A)
Kabell, J. (A)

Colorado Springs
Remley, H. L. (VA)
Vislisel, R. L. (A)

Denver
Anderson, G. H. (A)
Becker, S. (SM)
Blake, A. F. (A)
Boltz, G. T. (A)
Cook, H. L. (A)
Cook, L. V. (A)
Cruse, A. W. (SM)
Dobbins, B. E. (A)
Ekrem, T. C. (A)
Finch, J. E. (A)
Forsman, E. H. (A)
Freudenberg, H. O. (A)
Hagen, E. L. (A)
Harrison, P. W. (VA)
Heikkila, R. A. (A)
James, G. L. (A)
Johnson, H. S. (A)
Levy, S. (A)
Lockyear, W. H. (A)
McCarn, G. B. (A)
McDonald, B. R. (A)
Mitchell, M. W. (A)
Nelson, F. A. (A)
Owen, R. H. (A)
Pierce, O. B. (A)
Pinkerton, P. C. (A)
Preininger, L., Jr. (A)
Pyle, W. D. (VA)
Raper, A. J. (A)
Reno, H. (A)
Robertson, R. D. (A)
Rohrer, J. H. (A)
Sanders, G. O. (A)
Sargent, R. E. (A)
Sawyer, B. A. (A)
Shreve, T. S. (A)
Slusser, E. A. (A)
Smith, A. L. (A)
Stafford, C. M., Jr. (A)
Stanger, K. H. (A)
Starbuck, W. L. (A)
Stewart, M. J. (A)
Sullivan, F. L. (A)
Thomas, G. G. (A)
Thompson, R. C. (A)
Warner, W. H. (A)

Englewood
Thaxton, H. A. (A)

Kersey
Cross, W. D. (A)

Lakewood
Iseman, R. L. (A)

Montrose
Roberts, E. G., Jr. (A)

Pueblo
Evans, J. B. (A)
Sprayberry, F. L. (VA)
Venditti, F. P. (A)

Westminster
Mendenhall, F. S. (A)

CONNECTICUT

Berlin
Wilder, M. P. (VA)

Bridgeport
Arndt, W. R. (M)
Barhydt, C. R. (SM)
Beckmann, A. (VA)
Biele, R. J. (A)
Bradford, C. I. (VA)
Chamberlain, P. L. (A)
Coykendall, J. C. (VA)
Dome, R. B. (SM)
Duckworth, G. W. (M)
Dufourd, A. J. (A)
Dynes, R. E. (A)
Fick, C. G. (VA)
Fowler, K. (A)
Gethmann, R. B. (A)
Goldman, S. (SM)
Gura, A., Jr. (A)
Jones, F. F. (A)
Kaar, I. J. (F)
Lapinski, C. S. (A)
Lippert, H. B. (M)
Muschamp, R. A. (A)
Olson, F. A. (M)
Reich, P. J. (A)
Root, C. S. (M)
Shofstall, N. F. (A)
Vladimir, L. O. (M)
Wood, R. F. (A)
Worcester, J. A., Jr. (M)

Collinsville
Hart, R. D. (A)

Cromwell
Norman, F. H. (A)

Danbury
Elias, L. G. (A)
Hancock, J. R. (A)

Darien
Davis, S. L. (SM)
Markman, E. L. (A)
Starr, J. O. (A)

Devon
Amundsen, R. C. (A)
Cunning, H. R., Jr. (A)
McAllister, J. F., Jr. (A)

East Hartford
Warner, S. E. (VA)

East Lyme
Nash, H. E. (A)

East Port Chester
Wallace, M. (SM)

Fairfield
Bishop, N. (SM)
Pugsley, D. W. (M)

Greenwich
Ashton, J. O. (M)
Brown, W. N., Jr. (SM)
Deri, H. B. (A)
Devol, G. C. (A)
Lemmo, T. J. (A)
Shaw, G. S. (A)
Stokes, J. H. (A)
Wesley, C. A. (A)

Groton
Bell, W.S. (VA)
Powers, C. E. (A)

Hamden
Hewitt, C. D. (A)
Hubbard, B. R. (VA)
McNamara, F. T. (VA)
Smith, F. S. (VA)

Hartford
Clem, D. B. (A)
Doolittle, F. M. (SM)
Ferla, S. J. (A)
Greenaway, L. R. (A)
Hatry, L. (A)
Kelley, R. W. (A)
Lalanne, R. L. (A)
Waffle, W. M. (M)

Litchfield
Vanderpoel, F. L. (VA)

Long Hill
Dresser, W. R. (SM)

Manchester
Coe, R. S. (VA)
Goodstine, H. (A)
Wallin, W. (A)

Meriden
Hellmann, R. K. (VA)

Middletown
Brustmann, J. A. (VA)
Cady, W. G. (F)
Cohen, J. E. (A)
Devore, H. B. (SM)
Glover, C. P. (A)
Lamb, J. J. (A)
Niemiec, T. W. (A)
Van Dyke, K. S. (F)

Milford
Lyman, H. T., Jr. (SM)
Padesky, R. C. (A)

New Britain
Muckel, C. D. (A)

New Canaan
Castle, D. H. (SM)
Robinson, D. (A)

New Hartford
Dudley, B. (SM)

New Haven
Adams, N. I., Jr. (SM)
Altieri, V. J. (VA)
Bergmann, H. M. (A)
Buck, F. W. (A)
Curtis, R. C. (M)
Di Elsi, F. J. (A)
Dikmen, B. I. (A)
Edighoffer, E. A. (A)
Genera, V. A. (A)
Grew, L. B. (A)
Kelsey, P. C. (A)
Krauss, H. L. (A)
McLaren, I. H. (A)
Millard, A. M. (VA)
Ordung, P. F. (A)
Reich, H. J. (SM)
Sundius, H. W. (A)
Turner, H. M. (F)

Newington
Bliss, P. (A)

New London
Friedman, L. (M)
Haefner, S. J. (VA)
Hoag, J. B. (SM)
Jaffe, D. L. (VA)
Knight, J. B., Jr. (SM)
Kroenert, J. T. (A)
Merrill, J. (A)
Pfautz, C. E. (A)
Pollack, D. (SM)
Redington, E. B. (VA)
Rubin, H. B. (VA)
Sanford, C. V. (A)
Whannel, R. L. (A)

Newtown
Stone, E. W. (A)

Niantic
Archibald, C. B. (A)

North Stamford
Dunn, H. C. (A)

Norwalk
Cooke, H. S. (A)
Dilks, C. F. (A)
Jackson, E. A. (A)

Norwich
Brennan, J. J. (A)

Old Greenwich
Filgate, J. T. (SM)
Klein, A. S. (A)
Lott, A. L. (A)
~~Ogilvie, A. R. (A)~~
Voigt, G. (A)

Old Lyme
Gibbs, N. E. (A)

Old Saybrook
Radom, R. (A)

Oronoque
Kollar, T. J. (A)

Plainville
Galagan, S. (A)

Poquonnock Bridge
Brockett, P. C. (A)

Putnam
Child, D. E. (A)
Roller, E. R. (A)

Riverside
Lemmon, W. S. (SM)
Sontheimer, C. G. (A)

Rocky Hill
Wallace, E. B. (A)

Shelton
Zaskalicky, J. J. (A)

Simsbury
Silver, McM. (SM)

Southport
Bachman, W. S. (M)

Springdale
Cowan, E. J. (VA)
Gartner, C. L. (A)
Parker, E. J. (A)

Stamford
Apple, H. L. (A)
Content, E. J. (SM)
Hutchinson, R. W. (A)
Jacobson, L. (A)
Larsen, O. S. (A)
Milbourne, S. C. (VA)
Schonert, K. E. (A)
Shortt, H. L. (M)
Skehan, J. W. (A)
Sorensen, E. M. (A)
Ungvary, R. L. (A)

Stepney
Kelly, J. M., Jr. (A)

Stratford
Cahalan, E. T. (VA)
Craig, G. F. (M)
Fox, F. J. (M)
Fyler, G. W. (SM)
Sear, A. W. (SM)

Tolland
French, H. M. (A)
Weston, F. B. (VA)

Torrington
Black, D. R. (A)
Dixon, G. P. (A)
Miller, J. M., Jr. (A)

Unionville
Broomfield, J. L. (A)
Jones, M. C. (A)

Wallingford
Tuttle, R. W. (M)

Waterbury
Hales, F. B. (A)
Petrocelli, A. R. (A)
Stromwall, C. W. (VA)
Weyand, C. L. (A)
Weyh, E. G. (A)
Winchell, A. M. (VA)

Watertown
Johnson, C. F., Jr. (A)

West Hartford
Beekley, F. C. (M)
Blackburn, R. K. (A)
Grammer, G. (VA)
Handy, F. E. (VA)
Marble, F. G. (SM)
Smith, W. S., Jr. (A)
Warner, K. B. (F)
Williams, H. V. (A)

West Haven
Fraser, E. R. (A)

Wethersfield
Carini, L. F. B. (VA)
Harden, L. R. (A)
Mitchell, J. A. (A)

Willimantic
Harmon, W. R. (A)

Woodbridge
Martino, I. A. (VA)

DELAWARE

Newark
Young, M. G. (SM)

Wilmington
Albright, C. M., Jr. (A)
Hanson, V. F. (A)
Haynes, H. S. (A)

DISTRICT OF COLUMBIA

Takoma Park
Aurynger, J. J. (VA)

Washington
Abbott, N. A. (M)
Abraham, G. (M)
Adams, G. G. (A)
Adams, R. J. (A)
Albertson, F. W. (M)
Allen, E. W., Jr. (M)
Allman, F. L. (VA)
Altomare, R. E. (A)
Andrew, W. M. (A)
Apolenis, C. J. (A)
Apple, L. S. (A)
Arnold, P. N. (VA)
Arps, M. W. (VA)
Asserson, R. (SM)
Atkinson, J. R. (A)
Bagg, T. C. (A)
Bailey, G. W. (VA)
Bailey, S. L. (F)
Bakanowski, A. E. (A)
Balch, J. A. (F)
Barrett, A. E. (SM)
Barron, J. H. (SM)
Barse, G. R. (A)
Bartholy, F. E. (VA)
Barton, F. S. (F)
Beard, D. C. (VA)
Beasley, W. A. (A)
Beck, H. M., Jr. (VA)
Begley, W. W. (A)
Bell, W. S. (A)
Bennett, R. (SM)
Bennett, R. D. (SM)
Bernard, W. B. (A)
Bernstein, H. E. (SM)
Best, N. R. (A)
Bewig, K. W. (A)
Bird, R. E. (A)
Biser, M. H. (SM)
Black, A. O., Jr. (A)
Black, R. R. (VA)
Blake, L. V. (M)
Blasdel, F. G. (A)
Bloom, A. (A)
Bohn, A. L. (A)
Bolljahn, J. T. (A)
Bonham, L. L. (A)
Bookman, R. E. (A)
Booth, R. M., Jr. (A)
Bostad, J. (M)
Bourland, L. T. (SM)
Bowyer, V. T. (M)
Boymel, B. (VA)
Brantley, W. W. (M)
Breetz, L. D. (A)
Brester, W. A. (VA)
Brewer, G. R. (A)
Briscoe, W. L. (A)
Brodzinsky, A. (A)
Brown, J. H. (A)
Brown, T. H. (VA)
Brunetti, C. (VA)
Bull, W. I. (A)
Bullock, G. M. (A)
Burbage, G. H. (A)
Burgess, W. B. (SM)
Burmeister, M. A. (A)
Butman, C. H. (A)
Butt, H. R. (A)
Caldwell, L. G. (SM)
Caldwell, P. A. (A)
Callahan, H. R. (M)
Carr, L. H. (VA)
Carroll, R. L. (A)
Carroll, T. J. (M)
Carter, H. J. (M)
Castle, C. X. (A)
Chadbourne, H. L. (A)
Chamberlin, R. R. (VA)
Chambers, T. H. (A)
Chase, D. G. (A)
Chernosky, E. J. (A)
Chew, T. W. (VA)

Chipp, R. D. (SM)
Chung, H. P. (M)
Clark, H. L. (A)
Clark, J. F., Jr. (M)
Clark, K. G. (VA)
Clark, N. (A)
Clarke, A. S. (VA)
Clarke, F. H. (M)
Cleeton, C. E. (A)
Clinton, R. E. (A)
Code, A. D. (A)
Coggins, P. B. (A)
Collins, A. B. (VA)
Collis, H. O. (A)
Colvin, R. (VA)
Condon, E. U. (SM)
Connor, J. A. (A)
Contreras, M. J. A. (M)
Cook, F. W. (VA)
Cook, M. F. (A)
Cooke, N. M. (SM)
Cooper, D. H. (A)
Cortner, H. M. (A)
Couch, W. M., Jr. (A)
Courtis, R. P. (VA)
Cowperthwait, H. S. (A)
Cox, A. E. (A)
Craig, J. H. (A)
Crane, R. R. (A)
Craven, T. A. M. (F)
Culver, R. H. (VA)
Dalton, R. A. (A)
Davies, R. C. (A)
Davis, C. L. (SM)
Davis, G. C. (SM)
Davis, M. F. (A)
Davis, R. E. (A)
Davis, T. M. (SM)
Day, F. H. (A)
Dayot, V. D. (A)
Debel, C. A. (A)
Deeter, E. L. (A)
Dellinger, J. H. (F)
Delmege, A. H. (A)
Desnoyers, H. B. (A)
Dewey, V. A. (A)
Diamond, H. (F)
Dillard, E. L. (VA)
Dinger, H. E. (SM)
Dixon, J. T. (A)
Doane, J. E. (M)
Dorrell, R. E. (A)
Dorsey, H. G. (F)
Dow, J. B. (F)
Dubinin, A. V. (SM)
Dulin, W. E. (M)
Duncan, F. B. (A)
Eachus, I., Jr. (A)
Eisele, W. A. (A)
Elbourn, R. D. (A)
Ellermann, K. E. (A)
Ellis, R. E. (A)
Emmett, R. A. (M)
English, C. C. (A)
Estes, C. L. (A)
Fales, D., III (A)
Faust, W. R. (A)
Feldsteen, J. J. (A)
Finch, W. G. H. (SM)
Finney, W. J. (A)
Fischer, E. W., Jr. (A)
Flackbert, A. C. (A)
Flath, E. H., Jr. (M)
Fleming, J. J. (A)
Floegel, M. E. (A)
Flowers, H. L. (A)
Fonger, C. I. (M)
Franklin, P. J. (A)
Freeman, J. J. (A)
Frey, S. C. (A)
Fry, W. J. (A)
Fuller, I. W., Jr. (A)
Gall, J. E. (VA)
Garrison, M. M. (SM)
Gauss, H. (A)
Gebhard, L. A. (SM)
George, D. E. (A)
George, S. F. (A)
George, W. D. (VA)
Gersch, H. A. (A)
Gibbon, Q. D. (A)
Gibson, G. B. (M)
Gilford, S. R. (A)
Gilleo, M. A. (A)
Gilvarry, J. J. (A)
Globman, A. J. (A)
Goldstein, M. K. (VA)
Gore, E. M. (A)
Gracely, F. R. (A)
Graham, H. U. (VA)
Graim, R. J. (A)
Gran, R. M. (A)
Grantham, R. E. (M)
Grantham, R. W. (A)
Grebenkemper, C. J. (A)
Green, A. P. (A)
Green, B. I. (A)
Greer, J. W. (A)
Greer, W. N. (M)
Grenfell, W. S. (A)
Griffith, R. E. (A)
Grove, L. R. (A)
Gunn, R. (VA)
Guthrie, F. P. (SM)
Guthrie, R. C. (VA)
Haberman, H. M. (A)
Haeff, A. V. (SM)
Hafstrom, J. R. (A)
Hagen, J. P. (VA)
Hall, E. L. (VA)
Hall, H. H. (VA)
Hance, H. V. (A)
Hancock, G. N. (SM)
Hanley, T. E. (A)
Hanscome, T. D. (A)
Harmon, A. L. (A)
Harper, J. B., Jr. (A)
Haskins, R. L. (SM)
Hastings, A. E. (A)
Hastings, H. F. (VA)
Hausler, W. B. (A)
Haviland, E. F. (A)
Hawthorne, W. B. (A)
Headrick, J. M. (A)
Heaton, V. E. (VA)
Hedrich, A. L. (A)
Herider, E. D. (A)
Herman, H. (A)
Herring, R. A., Jr. (A)
Heusinkveld, M. (A)
Hickley, T. J. (VA)
Higgins, F. V. (A)
Hilker, B. R. (M)
Hill, B. C. (A)
Hird, L. R. (A)
Hodges, M. F. (M)
Hoffman, P. F. (A)
Hollingsworth, K. M. (A)
Hollywood, J. M. (SM)
Holt, L. J. (VA)
Hooper, D. M. (A)
Hopkins, A. F., Jr. (VA)
Horn, C. W. (F)
Hornberg, K. O. (A)
Houston, R. H. (A)
Hromada, J. C. (VA)
Hull, D. R. (VA)
Hull, M. I. (M)
Humphreys, T. I. (A)
Hunt, C. M. (SM)
Huntley, K. L. (A)
Hurlburt, E. H. (A)
Ikelman, G. J. (A)
Ikerd, H. M. (A)
Jackson, R. (VA)
Jackson, T. B. (A)
Jackson, W. E. (SM)
Jansen, W. R. (A)
Jansky, C. M., Jr. (F)
Jasik, H. (A)
Jeske, H. O. (A)
Johnson, C. Y. (A)
Johnson, L. (A)
Johnson, M. L. (A)
Johnson, P. A. (A)
Johnson, R. L. (A)
Jones, M. W. (A)
Kan, G. S. (A)
Karns, M. E. (VA)
Katzin, M. (SM)
Kaufman, J. (SM)
Kauke, J. R. (A)
Kaushagen, W. M. (A)
Kear, F. G. (SM)
Keel, J. J. (A)
Kelley, J. R. (A)
Kemper, A. L. (A)
Kennedy, R. L. (A)
Kershner, S. W. (A)
Kesecker, K. S. (A)
Kiebert, M. V. (SM)
Kihchel, O. D. (VA)
Killgore, H. S. (A)
King, C. J., Jr. (VA)
King, F. H. (A)
Kittler, F. W. (A)
Kniazuk, M. (A)
Knowles, R. B. (A)
Kohler, H. W. (VA)
Kopp, R. (A)
Krause, E. H. (A)
Kulberg, L. E. (M)
Kung, S. H. (M)
Langmuir, D. B. (SM)
Lapham, E. G. (VA)
Larsen, P. J. (SM)
Larson, R. E. (A)
Larsson, A. J. (A)
Lavery, H. J. (VA)
Lee, M. H. (A)
Leef, A. E. (A)
Lent, W. C. (SM)
Leppert, M. L. (VA)
Leslie, C. B. (A)
Lewis, F. D. (VA)
Libby, R. L. (A)
Lichtman, S. W. (A)
Liebson, S. H. (A)
Linger, R. A. (VA)
Link, J. H. (VA)
Lipscomb, J. L. (A)
Loeber, C. W. (M)
Lohnes, G. M. (SM)
Long, J. V. (VA)
Longman, E. R. (A)
Lonsdale, E. M. (A)
Lorenz, R. J. (A)
Lorenzen, H. O. (VA)
Loucks, I. H. (VA)
Loucks, P. G. (VA)
Loveberg, A. G., Jr. (A)
Lovejoy, R. E. (A)
Lowe, D. M. (A)
Lower, R. (A)
Lundquist, C. R. (A)
Lutz, S. G. (SM)
Lyon, R. E. (A)
Mack, D. A. (A)
Magnusson, P. C. (A)
Maiden, R. M. (A)
Maier, O. C. (VA)
Main, W. F. (A)
Managan, W. W. (A)
Markell, J. H. (A)
Marsh, W. E. (VA)
Marzetta, L. A. (A)
McCabe, A. P. (M)
McCarter, G. B. (A)
McComb, C. T. (A)
McDowell, W. E. (A)
McFolin, R. L. (A)
McKey, D. B. (A)
McMillin, W. R. (A)
McNary, J. C. (SM)
McNaughten, N. (M)
McVay, M. S. (A)
Meadows, L. A. (M)
Meilander, W. C. (A)
Melton, G. H. (A)
Mengel, J. T. (A)
Messer, H. G. (A)
Meyer, C. F., Jr. (A)
Meyer, R. E. (A)
Miedke, R. C. (A)
Miller, H. R. (VA)
Miller, J. M. (F)
Miller, J. W. (A)
Mirick, C. B. (SM)
Mitchell, F. T., Jr. (M)
Money, L. J. (A)
Moody, W. R. (M)
Mooers, C. N. (A)
Moore, A. H. (VA)
Moore, J. R. (SM)
Moore, W. J. (A)
Morse, W. R. (VA)
Moulton, A. B. (A)
Murray, A. F. (F)
Myers, J. J. (A)
Neely, G. M. (VA)
Neiman, M. S. (SM)
Nelson, C. W., Jr. (A)
Nichols, W. A. (A)
Norgorden, O. (A)
Norton, K. A. (F)
Nuckolls, R. G. (A)
O'Brien, M. P. (VA)
Ogas, M. J. (A)
Olken, H. (A)
Olmsted, D. T. (A)
Oras, R. (A)
O'Reilly, G. A. (SM)
Osborne, M. F. M. (A)
Ostrow, S. M. (A)
Ottinger, G. L. (A)
Ould, R. S. (VA)
Owen, E. A. (A)
Owen, W. E. (A)
Owens, R. B. (SM)
Paananen, R. A. (A)
Paine, H. G. (A)
Parker, C. V. (VA)
Parker, R. O. (A)
Peay, L. W., Jr. (A)
Penhollow, H. A. (VA)
Perlsweig, A. M. (A)
Pfund, C. E. (A)
Phelps, F. P. (A)
Pierce, J. F. (VA)
Plummer, C. B. (M)
Ports, D. C. (SM)
Powell, E. L. (SM)
Powles, F. T. (VA)
Pugh, J. E. (A)
Quinby, G. F. (A)
Ranneft, J. E. (A)
Ratliff, W. H., Jr. (A)
Rauh, M. A. (A)
Redcay, P. W. (A)
Reed, H. (A)
Reed, O. W. B., Jr. (M)
Reinke, J. A. (A)
Relis, M. J. (A)
Reynolds, W. W. (VA)
Riccobono, S. (VA)
Rice, S. M. (A)
Riebman, L. (A)
Riegger, W. J. (A)
Rietzke, E. H. (SM)
Riley, R. R. (A)
Ring, A. D. (VA)
Robbins, L. G. (A)
Robertson, A. S. (A)
Robinson, H. A. (SM)
Roddy, V. S. (VA)
Rohrich, C. G., Jr. (A)
Rohrich, G. J. (VA)
Rosenberg, B. L. (A)
Rupert, C. S. (A)
Russ, J. A. (VA)
Russell, C. M. (A)
Ryan, W. E. (A)
Sage, D. (A)
St. Clair, O. (A)
St. Jean, L. E. (A)
Salzberg, B. (SM)
Sanderson, J. K. (A)
Saunders, C. J. (A)
Saunders, G. H. (A)
Scheibe, E. H. (A)
Schimmelpfennig, W. (A)
Schleter, G. C. (VA)
Schooley, A. H. (VA)
Schreiner, E. D. (A)
Schuchard, E. A. (A)
Schulkin, M. (A)
Schuyler, W. E., Jr. (M)
Schwartz, L. S. (M)
Schwartz, S. (A)
Scott, E. D. (VA)
Seaton, J. W. (A)
Seccombe, W. T. (VA)
Seddon, J. C. (A)
Sees, J. E. (A)
Segal, P. M. (SM)
Sen, S. M. (A)
Senf, H. R. (VA)
Shaw, R. C. (SM)
Shawhan, E. N. (A)
Sherry, R. S. (A)
Shifflett, P. R. (A)
Shoemaker, J. R. (M)
Shore, H. H. (SM)
Shower, E. G. (VA)
Shufer, M. (A)
Silberstein, R. (VA)
Siling, P. F. (SM)
Simson, A. G. (SM)
Simson, L. H. (A)
Singer, G. (A)
Singer, H. J. (A)
Skelton, T. H. (A)
Sledge, O. D. (A)
Smeby, L. C. (SM)
Smith, C. N. (A)
Smith, C. R. (A)
Smith, E. H. (VA)
Smith, E. M. (A)
Smith, F. A. B. (A)
Smith, F. G., Jr. (A)
Smith, J. E. (SM)
Smith, N. (A)
Smith, P. L. (A)
Smith, S. T. (A)
Smith, V. M. (A)
Sneiderman, L. R. (A)
Speakman, E. A. (M)
Speed, R. B. (VA)
Spriggs, J. O. (A)
Sprinkle, M. C. (A)
Sreb, J. H. (A)
Stahl, B. E. (VA)
Stair, R. (A)
Starbuck, A. F. (A)
Staub, D. W. (A)
Stec, C. L. (VA)
Steidley, J. W. (M)
Stello, K. H. (A)
Stevens, A. W. (A)
Stewart, C., Jr. (A)
Stewart, F. P. (A)
Stewart, R. B. (SM)
Stoner, F. E. (SM)
Stoops, C. W. (A)
Stovall, H. E. (A)
Strauss, P. H. (A)
Struthers, F. W. (VA)
Stuart, D. M. (VA)
Sturgeon, S. S. (VA)
Sugar, G. R. (A)
Suski, H. M. (M)
Swingle, L. M. (A)
Sze, F. C. (A)
Taishoff, S. J. (A)
Taylor, A. H. (A)
Taylor, A. H. (F)
Taylor, R. E. (A)
Tetley, W. H. (M)
Teunisson, J. F. (VA)
Thomas, L. W. (M)
Trafton, D. C. (M)
Trexler, J. H. (A)
Tucker, D. P. (VA)
Turner, G. S. (SM)
Turner, W. R. (A)
Upp, C. B. (VA)
Varela, A. A. (VA)
Veilleux, T. A. (A)
Venn, D. A. (A)
Viener, A. H. (A)
Wainwright, R. M. (M)
Walcutt, J. L. (A)
Waldock, D. A. G. (M)
Walker, A. P. (A)
Wallace, J. D. (SM)
Wang, C. S. (A)
Ware, R. S. (A)
Waterman, P. (A)
Watson, K. M. (A)
Watterson, C. C. (A)
Watts, C. B., Jr. (A)
Weber, W. H. (A)
Webster, E. M. (F)
Weedman, W. F. (A)
Weimer, E. W. (A)
Weiss, L. (M)
Weldon, J. O. (VA)
Wellemeyer, H. A. (A)
Wells, H. W. (SM)
Wheeler, L. P. (F)
White, C. F. (VA)
White, G. (A)
White, R. E. (A)
White, W. A. (A)
Whitelock, L. D. (VA)
Wilcox, R. L., Jr. (A)
Wilkins, O. L. (A)
Williams, C. H. (VA)
Williams, D. (A)
Williams, J. R. (A)
Williams, K. B. (A)
Wilson, D. B. (VA)
Wilson, M. S. (A)
Winzemer, A. M. (A)
Wise, J. W. (A)
Works, H. A. (A)
Wrathall, G. R. (A)
Wright, J. W. (VA)
Wright, R. B. (VA)
Wyckoff, H. O. (A)
Wysotzky, M. Z. (SM)
Yaffee, P. (A)
Yarbrough, H. B. (M)
Young, C. P. (VA)
Young, E. W. (A)
Young, J. D. (A)
Young, L. C. (F)
Young, L. L. (A)
Zandonini, E. M. (VA)
Zee, D. M. (A)

FLORIDA

Banana River
- Keagy, W. R., Jr. (A)
- White, G. T. (A)
- Wittenburg, C. W. (A)
- Woodring, R. L. (A)
- Zwaska, J. F. (A)

Bartow
- Hiltner, E. B. (A)

Bradenton
- Lampkin, G. F. (VA)

Cocoa
- Godley, P. F., Jr. (A)

Coral Gables
- Broadhead, S. L., Jr. (A)
- Epperson, W. H. (VA)
- Rogers, G. F. (A)

Coronado Beach
- Benham, H. M., Jr. (A)

Daytona Beach
- Le Grand, H. R. (A)
- Van de Vord, A., Jr. (A)

Deerfield Beach
- Eberhard, E. (A)

De Leon Springs
- Browning, R. H. (A)

Eglin Field
- Kuck, B. M. (A)
- Swain, R. R. (VA)

Eustis
- Adams, T. N. (A)
- Lenkerd, J. P. (M)

Fort Lauderdale
- Bassett, R. E., Jr. (VA)
- Berger, M. (A)
- Gardner, R. S. (A)
- Knapp, J. F. (VA)
- Pace, E. C. (A)
- Troell, R. E. (A)
- Williams, E. A. (A)

Fort Myers
- Galyean, M. W. (A)
- Scott, F. A. (A)

Gainesville
- Brogdon, L. C. (A)
- Craig, P. H. (SM)
- Kessler, W. J. (A)
- Manchesian, J. T. (A)
- Moreno, C. A. (A)
- Rogers, Y. L. (A)
- Sashoff, S. P. (SM)
- Weil, J. (SM)

Haines City
- Horton, W. H. (A)

Hialeah
- Haddan, E. E. (A)

Jacksonville
- Boyer, L. R. (A)
- Buckler, D. R. (A)
- Corvi, J. A. (A)

Ffoulkes, C. E. (A)
Hayford, B. (A)
Lacy, P. D. (A)
Robinson, W. (A)
Shonerock, R. C. (VA)
Toms, E. C. (A)

Lakeland
Higgs, R. D., Jr. (A)
Lee, W. P. (A)

Largo
Wittstruck, H. H. (A)

Marianna
McNabb, W. L. (A)

Miami
Asendorf, J. A. (A)
Banks, A. C. (A)
Bassett, F. E., Jr. (A)
Bliss, A. O. (M)
Borton, F. W. (VA)
Burton, B. S. (A)
Carlson, A. F. (A)
Davenport, F. S. (A)
Fisher, C. S. (A)
Glasgow, W. S. (A)
Griffith, M. H. (VA)
Hastings, L. E. (A)
Johnston, H. M. (A)
Lewis, E. W. (A)
McGee, W. F., Jr. (A)
McKee, C. W. (VA)
Oglesby, R. G. (A)
Perez–Romero, M. (A)
Roberts, F. G., Jr. (VA)
Russell, M. A. (A)
Sanford, H. N. (A)
Shattuck, J. C. (A)
Sherron, R. J., Jr. (A)
Stief, F. W. (A)
Troutman, E. L. (A)
Weber, G. L. (A)
Williams, H. F. (A)
Williams, W. D. (A)
Zabel, L. W. (M)

Miami Beach
Hooper, S. C. (VA)
Leonard, J. (A)

Miami Springs
Mehrling, H. W. (A)
Murr, V. E. (VA)

Orlando
Conklin, E. B., Jr. (A)
Mantey, W. F. (A)
Osmundsen, G. A. (A)

Pensacola
Keene, R. E. (A)

Rochelle
Zetrouer, W. F., II (A)

Saint Petersburg
Campbell, R. E. (VA)
Combs, G. B., Jr. (A)
Hansen, E. (VA)
Link, L. J. (VA)
White, L. E. (A)

Shalimar
Moffet, J. A. (A)

Tallahassee
Ramm, C. H. (A)

Tampa
Borelli, J. (A)
Mathewson, D. (A)
Mitchell, J. H. (A)
Pearson, R. V. (A)
Randles, W. C. (A)

Titusville
Bower, R. S. (A)

West Palm Beach
Barrett, R. M. (A)
Frizen, J. E. (A)
Himes, B. T., Jr. (A)
Skirrow, J. F. (SM)

GEORGIA

Albany
Davis, J. C. (A)
Kinnett, C. M. (A)

Arlington
Brown, A. L. (A)

Atlanta
Akerman, B. (SM)
Alexander, M. S. (M)
Badgett, A. F. (A)
Baker, W. K. (A)
Bangs, P. C. (VA)
Barr, E. W. (A)
Boland, C. E. (A)
Branch, B. S. (A)
Crum, E. R. (A)
Dasher, B. J. (A)
Daugherty, C. F. (A)
Edson, W. A. (SM)
Fowler, N. B. (SM)
Geiger, L. H. (A)
Groves, R. M. (A)
Hanson, H. C. (A)
Harrington, G. M. (A)
Herndon, P. H., Jr. (A)
Holey, W. J. (VA)
Honnell, M. A. (A)
Howard, G. M. (A)
Hudson, J. W. (A)
Johns, C. N. (A)
Johnston, S. L. (A)
Jones, A. L. (A)
Jones, F. S. (A)
Kelly, W. F. (A)
Kock, R. E. (A)
Mattson, C. L. (A)
McLean, C. H. (A)
Miles, I. M. (A)
Mills, H. A. (VA)
Minton, R. W. (A)
Owen, W. D. (A)
Reid, H. L. (VA)
Roberts, A. P. (A)
Rosselot, G. A. (A)
Sarbacher, R. I. (SM)
Shortley, W. M. (A)
Spratlin, J. W. (A)
Strain, C. E. (A)
Sturman, B. J., Jr. (A)
Thompson, M. F. (A)
Thornton, H. P. (VA)
Van Nostrand, W. (SM)
Wilson, T., Jr. (A)

Augusta
Bertram, A. A. (A)

College Park
Graves, C. C. (A)

Decatur
Comer, J. M., Jr. (A)
Holbrook, R. A. (M)
Shropshire, A. W. (VA)

East Point
Brewer, R. V. (A)

Fairburn
Moats, W. E. (A)

Forest Park
Adamson, H. D. (A)

Fort Benning
Robinson, J. D. (A)
Yanagisawa, S. T. (A)

Gainesville
Barron, T. L. (A)

Griffin
Westbrooks, H. D. (A)

Hapeville
Moss, T. M. (A)
Weinberg, B. L. (VA)

Macon
Kibler, A. C. (A)
Rankin, G. P. (A)

Marietta
Dunphey, H. B., Jr. (A)

Pineview
Rockwell, P. D. (A)

Powder Springs
Luedtke, A. (A)

Robins Field
Taylor, R. W. (A)

St. Simon Island
Vosteen, R. E. (A)

Savannah
Gray, C. M. (A)
Kreutter, H. R. (A)
Thompson, M. E. (A)

Statesboro
Blitch, J. D. (VA)

Thomasville
Poole, J. W. (A)

IDAHO

Boise
Byrne, M. E. (VA)
Johntz, J. A., Jr. (A)
McGlochlin, B. B. (A)
Von Alven, W. H. (A)

Moscow
Harland, R., Jr. (A)
Hattrup, H. E. (A)
Hudson, P. K. (A)

Mountain Home
Hinshaw, R. M. (A)

Nezperce
Wysong, G. H. (A)

Osburn
Morin, E. P., Jr. (A)

Pingree
Judge, H. (A)

Twin Falls
Cox, F. V. (VA)

Weiser
Brock, R. L. (A)
Lloyd, L. H. (A)

ILLINOIS

Arlington Heights
Dymond, C. W. (VA)

Aurora
Hartman, L. A. (A)
Kulesha, K. J. (A)
Pride, E. W. (A)
Rebechini, P. G. (A)

Barrington
Kennedy, R. J. (A)

Belleville
Bernhardt, E. C. (A)
Johnson, P. B. (A)
Lutes, R. K. (VA)
Naber, J. S. (M)
Spiegel, L. (VA)

Bellwood
Marik, E. F. (A)

Bensenville
Chase, M. N. (A)

Berwyn
Brazda, J. C. (A)
Burns, E. E. (SM)
Dostal, R. J. (A)
Fanta, F. A., Jr. (A)
Glozer, A., Jr. (A)
Hajek, A. F. (A)
Prentiss, J. G. (SM)
Vodak, A. W. (A)

Bloomington
Moulic, R. J. (A)
Moulic, W. E. (A)
Weiss, M. E. (M)

Blue Island
Damm, G. J. (A)
Suhs, C. J. (A)

Broadview
Benson, A. E. (A)

Brookfield
Collins, E. A. (M)
Ives, G. M., Jr. (A)
Peterson, D. I. (A)

Canton
Ingersoll, W. P. (VA)
Smith, R. M. (A)

Carmi
South, V. W. (A)

Champaign
Duncan, D. C. (VA)
Ebel, A. J. (SM)
Walden, J. M. (A)

Chicago
Adler, H. J. (A)
Adler, R. (A)
Ambos, C. (A)
Andres, L. J. (SM)
Andresen, E. H. (A)
Andrew, V. J. (SM)
Andrews, E. F. (VA)
Arao, R. S. (A)
Armstrong, H. W. (VA)
Arnold, R. M. (VA)
Baker, W. H. (A)
Bartha, S. J. (A)
Bastin, M. A. (A)
Bates, J. F. (SM)
Batten, J. C. (A)
Bauer, E. J. (A)
Bauman, A. M. (A)
Bauman, H. W. (A)
Becker, H. W. (A)
Beitman, M. N. (A)
Bekkar, B. N. (A)
Bellinger, G. B. (A)
Beloungy, J. J. (SM)
Bennett, A. L. (A)
Benson, S. E. (A)
Berg, H. O. (A)
Berghoefer, F. G. (A)
Bernat, L. (A)
Bierach, K. F. (A)
Blahna, C. (SM)
Blinoff, W., Jr. (A)
Bloomenthal, S. (VA)
Blum, G. F. (A)
Bodenstab, E. A. (A)
Bottorff, P. A. (VA)
Bowen, J. L. (VA)
Boyajian, J. A. (SM)
Boyers, J. S. (M)
Boyll, L. O. (A)
Branscome, E. O. (A)
Brar, S. S. (A)
Braun, W. C. (VA)
Brittin, F. L. (SM)
Brolly, A. H. (SM)
Broude, M. B. (VA)
Brown, J. S. (M)
Buckthal, E. P. (SM)
Burack, H. (A)
Burley, P. B. (M)
Busch, A. E. (A)
Bushman, S. F. (M)
Cadle, L. R. (A)
Cairnes, W. E. (A)
Callanan, J. A. (SM)
Camras, M. (A)
Carlson, E. V. (A)
Carr, V. R. (A)
Carroll, C. T. (A)
Carroll, M. J. (SM)
Carson, G. W. (A)
Cary, E. A. (A)
Cawthon, E. F. (A)
Cervenka, F. J. (VA)
Chako, N. (M)
Christensen, A. B. (VA)
Christensen, C. A. (A)
Church, J. F. (SM)
Clardy, L. (A)
Claridge, G. C. (A)
Clark, D. E. (M)
Clark, J. T. (A)
Clark, R. A., Jr. (M)
Clark, W. J. (A)
Clough, K. (VA)
Cohan, O. (A)
Cohen, T. A. (SM)
Cole, B. M. (A)
Coleman, J. A. (A)
Colen, N. H. (A)
Conrad, N. L. (A)
Cooper, H. D. (A)
Cooper, N. J. (M)
Cooper, S. E. (A)
Cordulack, M. E. (A)
Coulter, W. H. (A)
Cox, C. R. (VA)
Crass, H. J., Jr. (A)
Crossett, E. C. (VA)
Crossley, A. (SM)
Crow, H. E. (A)
Davidson, P. (A)
Davis, D. M. (SM)
Davis, H. H. (A)
Davis, J. (A)
De Haan, J. (A)
Dervishian, E. (A)
Devine, W. F. (VA)
Dezettel, L. M. (A)
Diehl, E. J. (A)
Dimmer, R. P. (M)
Donaldson, C. A. (A)
Donaldson, H. J. (M)
Donaldson, R. J. (A)
D'Orio, A. F. (A)
D'Orio, P. A. (A)
Draus, A. R. (A)
Druz, W. S. (A)
Dunifon, J. W. (A)
Dunlap, J. F. (A)
Durkovic, J. (A)
Eastman, N. G. (A)
Edutis, V. L. (A)
Elliott, H. F. (SM)
Eng, W. T. (A)
English, W. C. (A)
Enslein, K. (A)
Epstein, B. (A)
Erwood, J. (A)
Erznoznik, F., Jr. (A)
Fasick, R. C. (A)
Ferris, W. T. (VA)
Fetterman, D. M. (VA)
Firestone, S. Z. (A)
Fischer, A. J. (VA)
Fisher, C. B. (A)
Flansberg, S. (A)
Foster, G. E. (A)
Frantz, N. (A)
Frieberg, M. (A)
Frihart, H. N. (M)
Fuller, C. A. (A)
Furedy, F. (A)
Furst, U. R. (M)
Gaarder, K. M. R. (M)
Galinski, L. L. (A)
Gallager, F. H. (A)
Garity, N. O. (A)
Gary, L. A. (A)
Gates, H. A. (SM)
Gaudio, J. C. (A)
Genovese, A. N. (A)
Gieffers, H. W. (A)
Gillespie, F. F. (A)
Goldstein, M. (A)
Graf, A. W. (SM)
Graffam, P. S. (A)
Gray, D. (VA)
Gray, R. O. (M)
Gregory, J. J. (A)
Hafker, H. F. (A)
Hager, E. A. (A)
Halinton, H. (M)
Hanik, P. (VA)
Hansen, W. H. (VA)
Hansen, W. W. (A)
Hartmann, C. L. (A)
Hassel, K. E. (SM)
Hassler, E. B. (A)
Haubrich, A. M. (VA)
Hauschild, J. P. (VA)
Hayes, H. D. (SM)
Heckler, E. A. (A)
Hemman, R. J. E. (A)
Hermanny, W. F. (VA)
Herrick, R. H. (SM)
Hershey, L. M. (SM)
Heyman, M. G. (A)
Hill, C. F. (A)
Hills, E. G. (A)
Hind, J. E., Jr. (A)
Hjermstad, H. U. (VA)
Hobbs, M. (SM)
Holtzman, M. (VA)
Hooper, P. B. (A)
Horn, L. H. (A)
Hubbard, L. O. (A)
Hyman, S. J. (A)
Imerson, H. E. (A)
Inman, J. F. (VA)
Iverson, F. A. (A)
Jackson, J. J. (A)
Jacob, F. N. (VA)
Jacobsen, A. B. (A)
Jacobsen, I. R. (A)
Jacobson, L. (A)
Jakavicia, F. J. (A)
Jensen, J. O. (VA)
Johnson, R. S. (A)
Johnson, R. Y. (A)
Jones, M. R. (VA)
Jorgensen, C. M. (A)
Jorgensen, N. A. (A)
Kahn, J. J. (A)
Kahn, R. L. (M)
Kalmus, H. P. (SM)
Kaluzna, I. J. (A)
Kandlik, C. G. (A)
Kane, J. P. (A)
Karpuk, A. (A)
Keller, W. P. (A)
Kelsey, E. L. (VA)
Kendall, P. R. (M)
Kenyon, F. R. (VA)
Killian, L. G. (M)
Kintzel, J. D. (M)
Klapperich, A. J. (VA)
Klopke, E. A. (A)
Kohler, E., Jr. (VA)
Kohner, M. (A)
Komm, J. (A)
Kopeny, L. J. (A)
Krahulec, F. (A)
Krakora, J. J., Jr. (SM)
Kramer, K. (SM)
Kransz, P. A. (M)
Krempel, F. M. (A)
Krueger, R. M. (M)
Kubilius, A. A. (A)
Kulp, A. (A)
Kusack, W. P. (A)
Lamarsh, J. E. (VA)
Lambie, H. H. (A)
Lange, W. W. (A)
Langstaff, R. H. (M)
Latour, M. H. (A)
Laycock, R. F. (A)
Le Baron, T. (A)
Leedom, J. N. (A)
Leidy, W. J. (VA)
Lense, R. J. (A)
Leonhardi, J. O. (A)
Lien, C. E. (VA)
Light, L. (A)
Lindberg, A. F. (A)
Lindgren, J. R. (A)
Lindsey, J. G. (A)
Littlewood, W. N. (A)
Lockhart, R. W. (A)
Luk, Y. K. (A)
Luttgens, H. C. (SM)
Lytle, C. W. (SM)
Macdonald, W. D. (A)
Magnuski, H. (A)
Mahler, R. J. (A)
Maloney, V. P. (A)
Marks, M. (VA)
Marshall, C. E. (VA)
Martin, C. F. (VA)
Martin, G. I. (SM)
Masters, E. W. (A)

Matthews, G. D. (VA)
Mauritz, F. E. (M)
May, H. E. (M)
McArthur, B. M. (A)
McGee, H. Q. (A)
McGinley, J. C. (VA)
McGlone, J. M. (A)
McIlvaine, D. K. (A)
McKay, W. M. (VA)
McKinley, G. (A)
McNalis, J. P. (A)
McNulty, T. J. (A)
Meehan, E. L. (A)
Meridith, R. R. (A)
Merrill, H. M. (VA)
Metcalf, H. E. (SM)
Meyer, C. H. (A)
Michael, K. R. (A)
Miller, R. L. (A)
Mills, A. J. (A)
Mitchell, T. E. (A)
Mittelmann, E. (SM)
Moffatt, V. J. (A)
Mohaupt, A. G. (A)
Molton, H. R. (A)
Monderer, B. A. (A)
Monfon, L. (A)
Montgomery, B. E. (M)
Morris, L. P. (VA)
Morrow, G. L. (A)
Mueller, F. L. (A)
Mueller, R. W. (A)
Murphy, J. L. (A)
Murray, F. H. (VA)
Nadler, M. (A)
Needham, D. P. (A)
Neesley, T. R. (A)
Neily, J. W. (A)
Nibbe, G. H. (A)
Niederman, B. (A)
Nielsen, H. A. (VA)
Nienaber, F. H. (A)
Nierman, L. G. (A)
Nieter, T. (A)
Noble, D. E. (SM)
O'Brein, E. (VA)
Offner, F. (A)
O'Hare, E. F. (A)
Osterlund, S. G. (M)
Pacholke, F. (VA)
Packard, L. E. (SM)
Patel, S. N. (A)
Patelke, R. A. (A)
Patrick, A. L. (A)
Patterson, W. S. (VA)
Pepperberg, L. (M)
Peter, B. K. (A)
Peterson, A. H. (A)
Petry, C. A. (SM)
Petzing, E. W. (VA)
Pfaff, E. R. (SM)
Pierson, C. D., Jr. (A)
Pinsky, J. D. (A)
Plotts, E. L. (SM)
Polydoroff, W. J. (SM)
Potter, J. D. (A)
Powell, C. S. (A)
Powers, J. S. (A)
Prangley, C. F. (A)
Probeck, C. J. (M)
Pueschel, W. R. (A)
Quarfoot, H. B. (VA)
Race, R. T. (A)
Rankin, J. A. (SM)
Rathjen, P. (A)
Read, C. T. (A)
Reardon, E. P. (A)
Reed, M. B. (A)
Remde, J. (VA)
Rennick, J. L. (VA)
Reynolds, D. J. (VA)
Rice, P. (A)
Richards, H. K. (VA)
Richards, S. (A)
Riddel, O. A. (VA)
Rifenbergh, C. M. (A)
Ripperger, W. A. (A)
Rodriguez, A. E. (VA)
Rogers, R. T. (A)
Ronning, H. (A)
Ronzheimer, S. P. (A)
Rose, J. K. (VA)
Rosenman, L. (A)
Ross, E. H. (M)
Ross, E. O. (M)
Ross, K. B. (VA)
Rowe, H. C. (A)
Rowe, T. L. (SM)
Roys, C. S. (SM)
Russ, W. E. (A)
Russell, D. C. (A)
Ryburn, P. W. (A)
Rylewicz, C. C. (A)
Samuelson, R. E. (SM)
Schlesinger, W. A. (VA)
Schnell, F. H. (SM)
Schor, F. W. (SM)
Schreiner, L. W. (A)
Schreyer, T. E. (SM)
Schultz, C. J. (A)
Schulz, E. H. (VA)
Schumacher, J. H. (A)
Schwalm, W. A. (SM)
Schwennesen, D. O. (A)
Scott, E. H. (SM)
Seideman, I. M. (A)
Sengel, P. A. (VA)
Shallcross, G. P. (A)
Sharp, J. W. (A)
Sholand, S. O. (A)
Shulman, A. (M)
Shure, S. N. (VA)
Siegel, D. T. (M)
Simon, L. (A)
Sinclair, D. C. (A)
Siven, L. (A)
Skolnik, B. J. (A)
Slugodzki, L. K. (VA)
Smith, A. B. (SM)
Smith, P. S. (SM)
Smythe, E. H. (SM)
Soich, W. S. (A)
Soria, R. M. (A)
Soukup, J. C. (A)
Sowers, F. E. (A)
Sparf, W. H. (A)
Stadler, R. (A)
Stann, L. (A)
Stanton, J. W., II (A)
Stecher, A. C. (A)
Stein, H. A. (A)
Stein, L. F. (A)
Stemm, R. E. (M)
Storer, B. W. (A)
Streich, F. W. (VA)
Striker, G. O. (SM)
Sullivan, J. E. (A)
Swanson, C. W. (A)
Swinyard, W. O. (SM)
Switzenberg, E. A. F. (M)
Szegho, C. S. (A)
Tarantur, S. (A)
Taylor, E. H. (A)
Taylor, K. L. (A)
Teeple, A. L. (A)
Thompson, J. E. (A)
Thorson, W. G. (VA)
Timmings, G. H. (SM)
Toy, T. G. (A)
Tregidga, A. C. (SM)
Trittenbach, J. M. (A)
Trowbridge, F. (A)
Trzyna, T. S. (A)
Tschannen, R. F. (A)
Turner, J., Jr. (VA)
Turner, K. D. (A)
Turner, U. (A)
Udell, C. D. (A)
Utter, R. A. (A)
Van Horn, J. H. (A)
Van Niman, R. T. (M)
Varone, R. A. (M)
Vogel, W. W. (A)
Voznak, E. (A)
Wakefield, E. H. (A)
Walker, F. W. (A)
Wallin, G. (A)
Waterman, H. C. (A)
Watterlohn, R. H. (A)
Wazlo, C. J. (A)
Weber, R. I. (VA)
Weeks, G. E. (VA)
Weiler, P. R. (A)
Welker, J. J. (A)
Westerberg, O. D. (A)
Weston, A. H. (A)
Whitman, M. R. (A)
Whitney, S. D. (A)
Williams, L. A. (A)
Winslow, J. (A)
Witt, W. U., Jr. (A)
Wolman, L. L. (A)
Wood, C. E. (A)
Woodruff, A. E. (VA)
Woods, A. A. (VA)
Wray, W. C. (A)
Yoder, D. R. (A)
Yost, K. E. (A)
Youtz, P. (A)
Zaander, C. J. (A)
Zarky, B. (M)
Zeuschner, R. F. (A)

Cicero
Jucius, S. W. (A)
Roeder, W. O. (A)
Wein, F. (A)

Clarendon Hills
Hansen, C. A. (M)

Collinsville
Riesmeyer, A. H. (A)

Deerfield
Canon, H. B. (SM)
Phillips, W. E. (VA)

Des Plaines
Hedrick, K. M. (A)
Koenig, G. (A)
Landeck, J. H. (A)
Marco, F. (SM)
Peterman, R. S. (M)
Smith, P. A. (A)

Dolton
Schaefer, R. W. (A)

Downers Grove
Courchene, H. B. (SM)
Eddy, W. L. (A)
Harder, R. B. (VA)
Kay, R. A. (VA)

Dundee
Boswau, H. P. (SM)

Dwight
Seabert, E. F. (A)

East St. Louis
Wise, H. G. (A)

Elgin
Atkins, C. E. (SM)
Johnson, G. (A)
Kadow, A. C. (VA)
Kult, M. L. (A)
Lang, G. W. (VA)

Elmhurst
Adams, J. J. (SM)
Aldred, A. D. (VA)
Alusic, J. (VA)
Bond, M. E. (SM)
Haines, D. G. (SM)
Jacker, E. W. (SM)
Leslie, F. E. (A)
Lindsay, W. R. (M)
Marquardt, J. A. (A)
Russell, W. W. (A)
Troxel, R. E. (A)
Winemiller, H. R. (M)

Elmwood Park
Fox, J. E. (VA)
Githens, T. A. (A)
Stroh, W. J. (A)
Woods, M. D. (A)

Eureka
Robinson, G. A. (A)

Evanston
Baltzley, J. V. (A)
Beam, R. E. (SM)
Bronwell, A. B. (SM)
Fancy, R. C. (M)
Gausewitz, C. H. (A)
Holland, H. A. (A)
Huxtable, C. K. (SM)
Kimbark, E. W. (M)
Maltby, A. I. (A)
Osborn, R. L. (A)
Robinson, G. D. (VA)
Rollefson, K. E. (M)
Saberson, C. J. (A)
Somerville, A. (A)
Wendt, R. H. (VA)

Evergreen Park
Kayner, H. J. (SM)
Kostyal, S. P. (A)
Wahle, J. J. (A)

Franklin Park
Brewster, F. C. (A)
McNatt, W. E. (A)

Freeport
O'Connell, G. (VA)

Fulton
Corwin, J. E., Jr. (A)

Geneva
McIlvaine, H. A. (M)
Nelson, D. A. (A)
Supitilov, M. C. (A)

Glencoe
Bennett, A. H. (M)
Brown, J. E. (SM)
Ferry, J., Jr. (A)
Spiegel, G. W. (A)

Glen Ellyn
Beeson, W. E. (A)
Benin, Z. (VA)
Christensen, A. (M)
Kidd, W. E. (A)
Winget, W. F. (A)

Glenview
Barr, R. L. (M)
Bell, J. F. (A)
Case, N. P. (SM)
Dunn, W. L. (SM)

Great Lakes
Brink, W. H. (A)

Granite City
Rasche, D. O. (A)

Harvey
Renne, H. S. (M)

Highland Park
Crouch, C. A. (A)
Kramer, A. W. (VA)
Limberg, R. A. (A)

Hinsdale
Dahl, E. A. (A)
Doyle, E. J. (VA)
Hanson, A. N. (A)

Hollywood
Keranen, E. W. (A)

Itasca
Florman, L. W. (A)

Jacksonville
Baptist, W. G. (M)
Cassens, G. J. (A)

Joliet
Brown, R. A. (A)
Kramer, R. F. (VA)
Sandretto, P. C. (SM)

Kewanee
Gamble, J. H. (A)

Lafayette
Wilkins, H. F. (A)

La Grange
Brodie, G. H. (M)
Foster, D. E. (SM)
Gable, L. S. H. (A)
Gable, M. L. (A)
Kalb, R. M. (A)
Knouf, R. J. (SM)
Medill, J. W. (A)
Post, E. A. (VA)
Richie, S. M. (VA)
Shaw, R. M. (VA)

Lake Bluff
Caspers, G. E., Jr. (A)

Lake Forest
Cohn, G. I. (A)

Lincoln
Knochel, R. F. (A)

Lincolnwood
Williams, F. B. (A)

Lockport
Carter, O. M. (VA)

Lombard
Biga, J. J. (A)
McCreary, H. J. (SM)
Moore, W. C. (SM)
Pedersen, I. C. (M)
Puhalski, D. (A)

Macomb
Bartlett, E. L. (A)
Wilcox, S. R. (A)

Mattoon
Fortner, O. D. (VA)
Rardin, V. E. (A)

Maywood
Forst, P. P., Jr. (A)
Philips, N. A. (A)

Morrison
Van Osdol, R. L. (VA)

Moweaqua
Novota, S. (A)

Normal
Wilson, B. J. (A)

Oak Lawn
Prokes, P. H. (M)
Voss, H. J. (A)

Oak Park
Bauer, B. (SM)
Berry, G. R. (M)
Beusman, R. M. (VA)
Boyter, R. W. (A)
Bryan, R. H. (VA)
Carnahan, C. W. (SM)
Cotsworth, A., III (A)
De Shong, J. A., Jr. (M)
Gates, H. W. (A)
Glover, R. P. (SM)
Goebel, E. S. (M)
Grunwald, R. F. (A)
Heimark, H. M. (A)
Hoffstetter, G. E. (VA)
Homrighous, J. H. (A)
Hopkins, A. R. (SM)
Jackson, W. C. (VA)
Jones, G. I. (SM)
Kenney, M. W. (SM)
Lewis, R. S. (A)
Linell, C. S. (A)
Logan, H. E. (A)
Murphy, O. R. (A)
Nangle, W. O. (A)
Pampel, F. L. (SM)
Piersall, B. P. (M)
Pye, H. C. (VA)
Reese, K. E. (M)
Simons, R. R. (M)
Thompson, R. T. (A)
Van Scoyoc, J. N. (A)
Wakefield, S. J. (A)
Yoder, R. S. (SM)
Zender, R. G. (SM)

O'Fallon
Chamberlain, P. E. (M)

Park Ridge
Aram, N. W. (M)
De Cola, R. (SM)
Hansen, T. A. (A)
Hill, O. O. (A)
Mead, L. R. (A)
Passow, E. B. (SM)
Pierce, R. J. (A)
Potter, M. L. (A)
Schroeder, W. R. (VA)
Silver, J. F. (VA)
Whiteman, R. A. (M)
Wolfgram, W. R. (A)

Pecatonica
Van Antwerp, M. C. (VA)

Peoria
Duffy, D. P. (A)
Giles, T. A. (A)
Morrow, L. A. (A)
Parks, V. H. (A)
Piety, H. O. (A)

Prospect Heights
Thompson, O. I. (A)

Quincy
Parker, B. E. (A)

River Forest
Gustafson, G. E. (F)
Knowles, H. S. (F)
Maciszewski, A. H. (A)
McCarthy, F. M. (VA)

River Grove
Grashoff, A. W. (A)

Riverside
Beatty, J. R. (VA)
Kean, W. F. (A)
Komm, P. M. (VA)
Novy, J. F. (SM)
Wesselman, E. (VA)

Rockford
Bullen, C. V. (VA)
Carlson, M. R. (A)
Hand, C. A. (VA)
Westbrook, E. P. (A)

Rock Island
Newhouse, A. B. (VA)
Palmer, P. S. (VA)
Sinnett, R. J. (VA)

Round Lake
Sherwood, R. (A)

Saint Charles
Anderson, C. A. (A)
Crane, W. O. (A)
Hohberger, H. P. (A)
Horst, A. W. (A)
Mac Dermaid, L. D. (A)
McCraigh, J. F. (VA)
Sperling, P. (A)
Torn, W. R. (A)
Weibler, C. T. (SM)
Winston, R. H. (A)

Scott Field
Shapiro, L. (A)

Skokie
Carter, R. W. (A)
Fruth, H. F. (SM)
Galitz, R. J. (A)
Stansfield, S. J. (A)

South Chicago
Kahn, L. (VA)
Weissmantel, C. H. (A)

Springfield
Carnes, E. C. (A)
Rast, R. E. (A)
Rodenburg, J. R. (A)
Sherwood, W. W. (A)

Streator
Gotch, J. X. (A)

Urbana
Albright, W. G. (A)
Bailey, A. D. (A)
Everitt, W. L. (F)
Fett, G. H. (SM)
Glan, G. (M)
Jensen, R. S. (A)
Jordan, E. C. (SM)
Nelson, D. E. (A)
Roberts, H. C. (SM)

Schwarzlose, P. F. (A)
Tykociner, J. T. (SM)

Villa Park
Fernandez, D. T. (VA)
Gorbunoff, A. (VA)
Hasek, G. (A)
Kessel, R. L. (A)
Kimmel, L. D. (A)
Kirby, T. H. (A)

Washington
Planck, R. M. (VA)

Waukegan
Freed, P. J. (A)
Rogers, A., Jr. (A)

Westchester
Green, C. A. (A)
Resetich, A. J. (A)

Western Springs
Cummings, K. M. (A)
Dondanville, R. V. (SM)
Hungerford, N. C. (A)
Kailus, P. (A)
Levy, G. F. (SM)
Scott, K. L. (VA)
Tanke, H. F. (VA)

Wheaton
Martin, P. E. (A)
Reber, G. (SM)
Squires, E. G. (M)

Wilmette
Cummings, E. G. (A)
Freeman, W. H. (VA)
Orner, R. J. (VA)
Schnell, W. J. (SM)

Winnetka
Burroughs, H. A. (SM)
Carter, H. A. (A)
Gaffney, M. P. (A)
Gorder, L. O. (A)
Hoffman, R. V., Jr. (A)
Jarvis, K. W. (F)
McEwan, T. S. (A)

INDIANA

Anderson
Phlegar, C. L. (A)
Rinehart, B. H. (VA)

Angola
Ax, L. S. (VA)
Carlson, E. R. (A)
Rodriguez, R. A. (A)
Shaw, C. E. (A)

Auburn
Capen, G. A. (A)

Aurora
Achatz, R. V. (VA)

Beech Grove
Morgrette, J. K. L. (A)

Bloomington
Barnard, R. L. (A)
Deal, H. B. (SM)
Doremire, F. E. (A)
Lipps, L. L. (A)
Maginnis, W. P. (SM)
Sellers, G. W. (A)
Siddons, G. F. (A)
Tarzian, S. (A)

Columbus
Coatney, A. E. (A)

Corydon
Cox, W. (A)

Elkhart
Bozak, R. T. (A)
Disney, V. H. (A)
French, H. E. (A)
Johnson, P. V. (A)
Kent, E. L. (SM)
McMullen, G. D. (A)
Newman, J. M. (A)
Rawlings, H. L. (A)
Smith, R. A. (A)
Vaksvik, A. J. (A)
Webster, J. C. (A)

Evansville
Davidson, R. (A)
Gehres, F. A. (A)
Kees, H. (A)
Robbiano, P. P. (A)

Fort Wayne
Baird, M. N. (A)
Beach, H. W. (VA)
Brooks, R. D. (A)
Buckbee, J. A. (A)
Cawein, M. (SM)
Cummings, B. R. (SM)
Dreisbach, R. H. (VA)
Falk, A. E. (A)
Ferguson, J. C. (A)
Fine, C. B. (A)
Fisher, H. F. (VA)
Freimann, F. M. (A)
Fromm, K. N. (M)
Hallmark, C. E. (A)
Harris, A. S. (A)
Harris, S. J. (A)
Johnson, L. L. (A)
Jones, R. B. (A)
Kibler, P. J. (VA)
Kierulff, W. E. (SM)
Kinsell, W. L. (VA)
Laitinen, L. K. (A)
Lovegren, P. B. (A)
Martin, N. F. (A)
Mayle, A. T., Jr. (A)
Nelson, F. H. (A)
Rasley, D. R. (A)
Ratts, B. H. (VA)
Richards, C. A. (A)
Salinger, H. W. G. (VA)
Samuelson, F. L. (A)
Sanders, R. W. (A)
Schantz, J. D. (SM)
Snell, P. A. (VA)
Stagnaro, J. A. (VA)
Strong, J. M. (A)
Thatcher, E. V. (A)
Thompson, K. J. (A)
White, N. N. (A)
Yoder, L. (VA)

Frankfort
Dossett, M. H. (A)

Gary
Jenkins, K. W. (A)
Shirk, K. C. (VA)

Goshen
Grissom, O. M. (A)

Hammond
Yingling, R. A. (A)

Indianapolis
Adams, H. E. (A)
Alden, E. E. (M)
Anderson, S. R. (A)
Arvin, M. J. (A)
Auble, R. N. (A)
Audritsh, Z. E. (A)
Ault, C. M. (A)
Aust, R. J. (A)
Bailey, R. E. (M)
Baker, K. (A)
Batsel, M. C. (F)
Beier, M. G. (M)
Bernier, V. A. (A)
Blakely, K. H. (A)
Buder, S. H. (A)
Carpenter, G. W. (VA)
Carson, H. E. (A)
Clark, J. R. (A)
Cochran, R. G. (A)
Culmer, W. J. (A)
Davis, H. (A)
Derey, C. H. (A)
De Voe, L. M. (A)
Duszak, H. (A)
Ennes, H. E. (A)
Garcia, J. H. (A)
Garstang, W. W. (SM)
Goetz, L. R. (A)
Good, L. H. (M)
Grayson, E. L. (A)
Gresham, W. S., Jr. (A)
Gutheil, C. M. (A)
Holland, H. S. (A)
Hood, J. T. (SM)
Hotchkiss, C. S. (A)
Howard, R. R. (A)
Jackson, C. H. (A)
Knox, R. N. (A)
Krauss, S. L. (A)
Lawrenz, F. W. (A)
Luke, C. H. (A)
MacNabb, V. C. (VA)
Mallory, H. R. (A)
McCormick, R. E. (A)
McFarren, L. E. (A)
Meadows, F. D. (A)
Metz, H. I. (VA)
Million, J. W., Jr. (SM)
Mittman, E. E. (A)
Monro, C. R. (A)
Morlock, W. J. (A)
Morrical, K. C. (SM)
Poarch, M. F. (A)
Post, B. M. (A)
Price, J. F. (M)
Reager, A. M. (VA)
Reesor, D. A. (A)
Reynolds, J. H. (M)
Rosser, T. N. (VA)
Roys, H. E. (VA)
Sarazen, E. P. (A)
Schlegel, R. E. (A)
Schoonover, W. L. (A)
Schwarzenbach, E. E. (VA)
Seabert, J. D. (A)
Seaton, E. H. (A)
Selig, B. L. (A)
Shrader, T. M. (SM)
Stafford, H. C. (A)
Stasz, C. E. (A)
Stewart, W. E. (VA)
Taylor, J. M. (M)
Tharp, B. W. (A)
Trout, J. L. (A)
Tulauskas, L. (VA)
Valinet, S. S. (A)
Vehling, A. I. (A)
Wessel, A. W. J. (A)
West, H. E. (A)
Wigington, L. M. (A)
Wolff, H. R. (A)
Woll, H. J. (M)

Kokomo
Carlson, E. C. (A)
Gaiser, M. W. (VA)
Jenkins, R. L. (A)
Martin, D. W. (A)
Pyle, H. (A)
Schwarz, B. A. (SM)
Tynan, A. G. (SM)

Lafayette
Cooper, G. R. (A)
Evans, H. R. (M)
Westneat, A. S., Jr. (A)

Lakeville
Smith, H. E. (A)

La Porte
Andreasen, I. (A)

Lebanon
Kline, W. W. (A)

Lutherville
Butler, H. J. (A)

Marion
Charles, C. W. (A)
Lemieux, C. J. (VA)
Lucas, D. T. (A)
Odden, R. B. (A)
Ter Veen, L. A. G. (A)
Pressley, J. H. (F)
Whyman, E. W. (A)

Michigan City
Raatz, M. (A)

Milford
Helminger, S. E. (A)

Mishawaka
Buranich, G. F. (A)
Dare, E. B. (A)
Metzner, P. E. (A)

Morocco
Davis, E. J. (VA)

Mulberry
Henrichs, E. F. (A)

Muncie
Burton, D. A. (A)

New Haven
Bell, D. L. (A)

Notre Dame
Angelakos, D. J. (A)
Mullin, C. J. (M)

Oriole
Frakes, S. E. (A)

Oxford
Bloom, G. (VA)

Pleasant Lake
Hagen, H. M. (A)

Plymouth
Smith, R. (A)

Richmond
Klehfoth, W. G. (A)
Timmons, F. E. (A)

Rochester
Hinderer, E. F. (A)

Russellville
Sutherlin, L. (SM)

Seymour
Draper, C. A. (A)

South Bend
Andrews, J. C. (A)
Bock, F. J. (A)
Burroughs, L. R. (A)
Cole, H. G. (A)
Corbin, R. M. (A)
Cornwell, R. C. (A)
Ellithorn, H. E. (M)
Foster, D. V. (A)
Gelnett, V. M. (A)
Gerlach, C. J. (A)
Grant, J. H. (A)
Holland, S. J. (A)
Kahn, A. (A)
Knoblock, E. C. (A)
Lehr, O. A. (A)
Mangus, P. R. (VA)
Mirkin, M. (A)
Morris, H. B. (A)
Quigley, A. J. (A)
Siekman, R. E. (A)
Stauder, L. F. (A)
Todd, A. C. (VA)
Wiggins, A. M. (A)
Williams, R. S. (A)
Willson, J. E. (A)
Winkler, M. R. (VA)
Wisman, F. O. (A)

South Milford
Houck, H., Jr. (A)

Valparaiso
Alinsky, J. W. (A)
Blaquiere, B. E. (A)
Bullis, E. E. (A)
Hershman, J. B. (SM)
Johnson, H. L. (A)
Packman, M. E. (VA)
Stoerck, L. A. (A)

Vincennes
Blevins, L. G. (A)

Walkerton
Goppert, H. R. (A)

West Lafayette
Davis, R. E. (A)
Happell, G. E. (A)
Heim, H. J. (VA)
Hesselberth, W. M. (A)
Nitschke, N. E. (A)
Seal, P. M. (A)
Siskind, R. P. (SM)
Trebby, F. J. (A)

IOWA

Ames
Babcock, W. E. (A)
Emery, W. L. (A)
Haas, M. H. (A)
Hanson, H. L. (A)
Lewis, L. L. (A)
Ryder, J. D. (SM)
Stewart, C. (A)
Waidelich, D. L. (SM)

Bonaparte
Donnelly, A. V. (A)

Boone
Dorman, L. R. (A)
Garretson, D. (A)

Cedar Rapids
Abrams, H. T. (A)
Anderson, W. J. (A)
Arthurs, L. J. (A)
Babillus, J. (M)
Beetham, R. B. (VA)
Bessemer, L. E. (M)
Bilyue, C. R. (A)
Birdsong, O. J. (A)
Bissell, L. E. (A)
Boekhoff, J. H. (A)
Breed, W. M. (A)
Bruene, W. B. (M)
Burrell, M. W. (A)
Colander, R. E. (M)
Collins, A. A. (VA)
Conrad, R. S. (M)
Cox, R. T. (A)
Craft, L. M. (M)
Davis, F. M. (M)
Demuth, J. O. (A)
Ehrman, E. F. (A)
Everhart, K. (A)
Findley, L. K. (SM)
Fink, J. G. (A)
Foster, J. W. (A)
Fredine, E. L. (M)
Gamara, N. J. (M)
Gates, R. S. (A)
Giacoletto, J. P. (A)
Giovanazzi, S. A. (A)
Glynn, L. A. (A)
Gorman, F. J. (A)
Graham, D. J. (A)
Green, J. A. (M)
Hahn, F. C. (A)
Hale, N. H. (M)
Heath, J. W. (A)
Hendriks, H. J. (A)
Henrici, C. R. (A)
Higgins, A. K. (A)
Hixenbaugh, G. P. (A)
Holets, L. L. (A)
Holmes, D. W. (A)
Hubbard, M. R. (M)
Kent, R. C. (A)
Kucera, R. J. (A)
Leger, R. M. (A)
Lieske, E. W. (A)
Maki, G. J. (M)
Martz, F. W. (A)
Mayer, R. H. (A)
McConnell, T. E. (A)
McCoy, V. D. (A)
Moss, H. A. (A)
Olson, R. H. (M)
Pappenfus, E. W. (M)
Parmer, P. R. (A)
Perry, V. G. (A)
Pinney, E. M. (A)
Price, G. W. (A)
Roberts, D. E. (A)
Salisbury, W. W. (SM)
Sansbury, G. L. (M)
Senti, E. C. (A)
Smith, J. W. (A)
Smith, M. S. (VA)
Stewart, W. F. (M)
Sublett, R. H. (A)
Thomforde, C. J. (M)
Vaughn, K. E. (A)
Vavra, H. G. (A)
Vogel, V. H. (M)
Wainwright, L. F. (A)
Wayland, R. J. (VA)
Wetzel, G. N. (A)
Wilson, R. L. (A)
Wulfsberg, A. H. (A)
Wulfsberg, P. G. (A)

Clinton
Bishop, G. E. (A)

Council Bluffs
Hansen, B. P. (A)
Snyder, E. H. (A)
Stewart, A. C. (A)

Davenport
Naylor, M. W. (A)

Des Moines
Bartlett, F. E. (A)
Calderon, M. M. (A)
Eastman, J. W. (A)
Loyet, P. A. (SM)
Quentin, C. F. (A)
Rissler, H. D. (VA)
Root, W. L. (A)
Snyder, R. E. (A)
Tousley, P. (A)

Douds
Greenfield, D. C. (A)

Dubuque
Carlson, L. T. (A)

Garrison
Stauffer, R. E. (VA)

Guthrie Center
Driggs, L. O. (A)

Hartley
Grotewohl, H. D. (VA)

Iowa City
Carson, G. S. (M)
Holland, R. E. (A)
Hubbard, T. P., Jr. (A)
Hunter, T. A. (M)
Menzer, C. H. (M)
Shoemaker, H. L. (A)
Stephens, T. C. (A)
Ware, L. A. (M)

Keokuk
Joy, C. R., Jr. (A)

Keota
Arnold, H. H. (A)

Mapleton
Coddington, R. H. (A)

Marion
England, L. C. (A)
Updegraff, E. E. (A)

Marshalltown
Von Tersch, L. W. (A)

Mason City
Bey, P. P. (A)

McGregor
Woods, T. D. (VA)

Mitchellville
Melloh, C. I. (A)
Olson, R. E. (A)
Pratt, R. W. (A)

Mount Vernon
Pratt, F. E. (A)

Shenandoah
Moss, T. L. (VA)

Sioux City
Church, R. L. (A)
Hamm, H. W. (A)
Michaelson, M. W. (A)
Seeley, G. F. (A)
Smith, A. H. (A)

Vinton
Fletcher, K. L. (A)

Waterloo
Kelly, L. E. (A)

West Branch
Wright, P. M. (A)

KANSAS

Bethel
Crowl, J. M. (A)

Bonner Springs
Hansel, P. G. (A)

Chase
Stevenson, J. M. (A)

Coffeyville
Hawkins, M. (A)

Fort Leavenworth
Snyder, G. H. (VA)

Gardner
Gault, W. W. (A)

Great Bend
Kaiser, A. (A)

Kansas City
Ayres, R. C. (SM)
Dickenson, K. G. (A)
Judkins, L. G. (A)
Kimball, C. N., Jr. (SM)
Monroe, W. J. (A)
Petticrew, C. A. (A)
Siebers, L. F. (A)
Stoker, F. E., Jr. (A)
Stone, J. W. (A)
Woster, G. W. (A)

Lawrence
Petree, B. (A)
Richardson, G. A. (A)

Manhattan
Hewson, K. D. (A)
Martin, K. H. (SM)

Mission
Carnes, W. T., Jr. (M)
Curtis, G. L. (A)
Esler, E. H. (A)
Omer, C. L. (SM)
Ottman, P. B. (A)

Overland Park
Hammer, F. E. (A)
Sanborn, B. M. (A)

Pittsburg
Forman, H. W., Jr. (A)

Salina
Greiner, W. W. (A)

Topeka
Burns, L. V. (A)
Cook, J. W. (VA)
Costelow, J. A. (A)
Metzdorf, E. K. (A)
Smith, W. T. (A)
Smithmeyer, L. P. (A)

Wichita
Crotinger, R. M. (A)
Farnsworth, B. W. (A)
Harrell, J. W. (A)
Hickerson, H. H. (A)
Pilant, R. H. (A)
Pyle, K. W. (A)
Shire, L. E. (A)

KENTUCKY

Anchorage
Herrick, S. F. (A)
Williams, L. A. (M)

Ashland
Hutchinson, J. M. (A)
Reese, V. N. (A)
Weaver, C. W. (A)

Bardstown
Ludwick, C. A. (A)

Bellevue
Rohrer, R. S. (A)
Sydell, J. H. (A)

Bowling Green
Callahan, G. F. (A)

Campbellsville
Crawley, J. B. (A)

Covington
Rauf, R. H. (A)
Topmiller, C. H. (VA)

Danville
Frank, J. P., Jr. (A)

Fort Thomas
Eckerle, E. R. (A)
Kolo, R. E. (SM)

Hopkinsville
Porter, B. E. (A)

Jeffersontown
Hewitt, L. G. (M)

Lexington
Brazelton, M. W. (A)
Helt, S. (M)
Morris, C. A. (A)

Louisville
Bell, R. V. (A)
De Munbrun, E., Jr. (A)
Gates, S. H. (A)
Heick, B. K. (VA)
Hickok, W. H. (VA)
Hudson, W. E. (M)
Ransdell, E. W. (A)
Russell, J. D. (A)
Smith, A. E. (A)
Smith, H. T. (A)
Summerford, D. C. (M)
Sumpter, P. B. (A)

Marion
Mick, E. (A)

Maysville
Miller, J. A., III (A)

Newport
Schwerman, J. F. (A)

Owensboro
Bain, G. W. (VA)
Lattin, W. J. (A)

Paducah
Shelton, R. W. (A)

South Fort Mitchell
Konersman, E. J. (A)

LOUISIANA

Baton Rouge
Coullard, J. B. (A)
Wood, G. W. (A)

Crowley
Egan, D. G. (VA)

Houma
Chamberlain, R. D. (A)

Lake Charles
Moses, E. C. (A)
Vincent, L. P., Jr. (A)

Monroe
Digby, J. F. (A)
Stover, E. B., Jr. (A)

New Orleans
Allen, T. L., Jr. (A)
Angelo, E. J., Jr. (A)
Atkinson, C., Jr. (A)
Bloom, J. D., Jr. (VA)
Courtenay, J. A. (VA)
Cronvich, J. A. (VA)
Daspit, J. I. (A)
De Marr, J. D. (VA)
du Treil, L. J. N. (SM)
Freeland, W. T. (M)
Lehde, P. E. (F)
Lilley, A. J. (A)
Lund, J. E. (A)
Maggiore, A. F. (A)
Melohn, D. F. (A)
Monaghan, P. E. (A)
Morris, G. W. (A)
Peirce, G. H. (VA)
Pendergrass, F. L. (VA)
Rackle, E. E. (A)
Rawls, H. F. (A)
Reed, S. G., Jr. (A)
Roach, W. E. (A)
Schenk, P. J. (A)
Steidtmann, C. E., Jr. (A)
Thompson, R. J. (A)
Tong, E. (A)
Vitter, A. L., Jr. (VA)

Ruston
Spencer, J. C. (A)

Shreveport
Bedford, S. M., Jr. (A)
Keen, C. D. (A)
Maddox, C. H. (VA)
Murray, J. W. (A)
Shelton, T. J., Jr. (A)

Vivian
Janik, J. L. (A)

MAINE

Auburn
Nichols, G. P., Jr. (A)

Bangor
Creamer, W. J. (VA)
Libbey, W. M. (A)

Brunswick
Heindsmann, T. E., Jr. (A)
Little, N. C. (VA)

Cape Elizabeth
Rodick, G. H. (A)

Fryeburg
Farnsworth, P. T. (F)

Lewiston
O'Brien, J. A. (A)

Madison
French, R. M. (A)

Orono
Crabtree, K. G. (A)

Portland
Brewer, L. F. (A)
Collins, L. R. (VA)
Hodgkins, R. W. (VA)
Loveday, D. W. (A)

Presque Isle
Lorenz, F. H. (A)

Rumford
Jones, C. W. (A)

South Portland
Brewer, A. H., Jr. (A)
Ranks, J. E. (A)
Robbins, I. L. (VA)

Waldoboro
Cooney, J. R. (A)

Wilton
Medrow, K. R. (A)

Wiscasset
Seamon, B. (A)

MARYLAND

Aberdeen
de Bey, L. G. (A)
Hess, D. C., Jr. (A)
Hodge, A. H. (VA)

Aberdeen Proving Ground
Cooper, D. T. (VA)
Lieb, J. S. (A)
Payson, E. C. (A)
Putnam, R. E. A. (VA)

Accokeek
Harris, F. H., Jr. (A)

Annapolis
Albright, E. L. (A)
Burda, A. J., Jr. (A)
Davis, D. W. (A)
Fisher, B. A. (VA)
Frey, J. E. (A)
Giet, G. R. (VA)
Goodhue, W. W. (VA)
Hitchcock, R. C. (SM)
Kinney, G. F. (VA)
Matthews, L. M. (A)
Menneken, C. E. (A)
Mumford, E. R. (A)
Peterson, H. L. (A)
Sandorf, I. J. (VA)

Arbutus
Bruns, J. E. (A)

Bainbridge
Edmonds, W. H. (A)

Baltimore
Arnold, D. E. (M)
Badger, G. R. (A)
Bard, L. T. (A)
Barlow, E. P. (A)
Bassford, S. W., Jr. (VA)
Bearden, J. A. (SM)
Beck, B. G. (A)
Bender, L. B. (SM)
Benson, H. C. (A)
Bereston, I. A. (A)
Betterton, A. R. (A)
Bloomer, T. M. (SM)
Blunt, A. F. (A)
Booth, J. D. (VA)
Borden, E. L. (A)
Boss, B. B. (A)
Boyd, B. (VA)
Boykin, J. R. (M)
Bradford, H. K. (M)
Bradford, W. O. (A)
Brown, F. D. (A)
Bulkley, A. W. (M)
Burnside, C. J. (SM)
Cary, T. R., Jr. (A)
Chapin, E. W. (M)
Craig, A. G. (VA)
David, G. B. (A)
Davis, J. W. (M)
Deitz, J. (M)
Dent, W. U. (A)
Dickson, F. H. (A)
Dowell, A. E. (A)
Dreier, W. A. (A)
Duff, J. S. (A)
Eckels, A. E. (VA)
Edgerly, A. H. (VA)
Edwards, J. M. (A)
Ellert, C. A. (VA)
Evans, W. C. (F)
Exley, G. A. (A)
Fischer, F. W. (VA)
Fox, R. C. (A)
Franz, W. J. (A)
Frey, A. R. (VA)
Friree, F. L. (A)
Fry, P. F. (A)
Fuqua, H. G. (A)
Geiges, K. S. (A)
Goldbach, A. C. (A)
Goldberg, H. (SM)
Goodnow, A. C. (VA)
Goodyear, W. F. (A)
Graef, R. P. (VA)
Graf, H., Jr. (VA)
Hamburger, F., Jr. (SM)
Hammond, J. G. (A)
Harmon, R. N. (SM)
Healy, L. J. (A)
Heck, J. R. (A)
Hedeman, W. R., Jr. (A)
Hensley, W. A. (M)
Henthorn, J. E. (A)
Hierath, D. C. (M)
Hoddinott, E. V. (A)
Houston, G. P., III (A)
Hovey, K. J. (A)
Jackson, H. L. (M)
Jacob, M. I. (A)
Jones, M. L. (A)
Jones, O. J., JR. (A)
Kempf, R. A. (VA)
Kershner, R. H. (A)
Kinn, T. P. (SM)
Kinsman, W. D. (M)
Kolar, E. F. (SM)
Kreager, P. H. (M)
Krebs, W. N. (VA)
Kreis, A. L. (VA)
Lange, E. H. (VA)
Lau, C. B. (A)
Leap, G. A. (A)
Lindemann, H. B. (A)
Little, D. G. (F)
London, C. (SM)
Martin, A. C. (M)
Martin, D. W. (A)
McClellan, C. E. (M)
McMordie, F. (A)
McNally, H. R., Jr. (A)
McNaney, J. T. (M)
McSherry, K. L. (A)
Meier, W. M. (A)
Mihelich, J. B. (A)
Miller, C. F. (A)
Miller, J. P. (VA)
Monroe, C. J. (A)
Morgan, R. H. (A)
Morrison, N. J., Jr. (A)
Motta, N. O. B. (A)
Mueller, P. L. (A)
Munson, L. A. (A)
Mutch, J. J. (A)
Nims, A. A. (A)
O'Connor, G. S. (A)
O'Donnell, R. J. (A)
Omberg, A. C. (SM)
Orem, E. A. (A)
Palmes, A. H. (A)
Pariseau, R. G. (VA)
Peterson, O. L. (A)
Plummer, W. E. (SM)
Porst, E. G. (A)
Powers, A. T. (A)
Price, H. W., Jr. (A)
Rambo, S. I. (M)
Ranft, W. Q. (A)
Raymond, N. (A)
Renoff, G. F. (A)
Ridenour, W. S. (VA)
Riley, R. N. (A)
Roder, C. C. (VA)
Ruehl, G. C. (A)
Sandberg, H. L. (A)
Scheneman, E. E. (A)
Sears, P. R. (M)
Sloan, F. M. (A)
Spartana, A. R. (A)
Spencer, H. L. (M)
Spencer-Strong, G. H. (A)
Stout, G. P. (VA)
Streb, R. J. (A)
Suffield, F. G. (M)
Taich, L. (A)
Tarkoff, P. B. (A)
Taylor, M. (VA)
Teres, B. W. (A)
Thaler, G. J. (A)
Thompson, E. M. (A)
Treuhaft, M. A. (A)
Turk, K., Jr. (A)
Tuttle, L. H. (VA)
Venable, D. (M)
Vore, M. P. (A)
Wagner, L. P., Jr. (A)
Waldorf, S. K. (SM)
Wantz, S. P. (A)
Warner, J. L. (A)
Watson, R. D. (A)
Weant, C. H. (A)
Webb, W. L. (SM)
Weigel, E. L. (A)
Wells, W. F. (A)
Whelan, F. G. (A)
Whitney, A. (VA)
Williams, A. D. (A)
Williams, L. C. (A)
Wilson, W. R. (M)
Wroten, J., Jr. (A)

Berwyn
Brown, J. (A)
Chitty, H. W. (A)
Daniels, T. E. (VA)
Erickson, K. W. (A)

Bethesda
Andrews, H. L. (VA)
Berkner, L. V. (SM)
Bush, G. B. (A)
Bush, G. P. (SM)
Chambers, J. A. (SM)
Cohen, L. (F)
Creedon, H. T. (A)
Curl, G. H. (A)
Frazier, H. S. (SM)
Hartz, J. E. (VA)
Hilgedick, W. C. (VA)
Hunter, D. (A)
Mickey, L. (VA)
Wheeler, L. B. (A)

Brandywine
Conner, L. M. (A)
Swartz, R. O. (M)

Catonsville
Briggs, M. R. (VA)
Cole, D. P. (A)
Davis, A. (A)
Johnson, J. L. (A)
Kowalesky, R. J. (A)
Mabry, F. S. (A)
Macdonald, A. A. (A)
Moore, V. (SM)
Phelps, G. H. (SM)
Scalbom, J. D. (A)
Singel, J. B. (A)
Ulman, L. J. (A)
Winchester, J. L. (A)

Cheverly
Beegle, D. H. (VA)
Waldo, G. V. (VA)

Chevy Chase
Brady, J. B. (SM)
Caldwell, C. M. (A)
Duncan, H. S. (A)
Engel, F. H. (SM)
Henderson, W. D. (A)
Jett, E. K. (F)
Karr, P. R. (A)
Kelley, G. W., Jr. (VA)
Lytle, T. M. (VA)
Rau, D. S. (SM)
Reynolds, G. E., Jr. (A)
Stewart, J. D. (SM)
White, E. L. (SM)

Clinton
Ramp, R. L. (A)

College Park
Carroll, C. F., Jr. (A)
Corcoran, G. F. (A)
Pear, C. B., Jr. (VA)
Smith, T. (A)

Cumberland
Jefferies, D. W. (A)
Knieriem, R. A. (A)

Dundalk
Bartlett, B. R. (A)
Warner, R. C. (A)

East Riverdale
Tidball, F. E. (A)

Ferndale
Herbert, C. (M)

Frederick
Kirksey, T. W. (A)
Price, O. I. (A)
Thiel, J. G. (A)

Friendship
Geddes, B. B. (A)

Greenbelt
Goldstein, G. D. (A)
Wetter, A. (A)

Hagerstown
Heil, S. H. (A)

Halethorpe
Frandsen, L. N. (A)
Kadak, E. (A)

Hyattsville
Alba, C. J. (A)
Bethard, C. T. (A)
Butts, J. H. (A)
Gipe, R. C. (A)
Greene, F. M. (M)
Honea, L. W. (A)
Lyon, H. H. (VA)
Raybuck, C. B. (A)

Kensington
Spinks, A. W. (A)

Landover
D'Acre, F. G. (A)

Landover Hills
Knutson, H. C. (VA)

Laurel
Andersen, A. (VA)
Mobley, M. C., Jr. (A)
Roberts, W. K. (A)
Shinn, E. N. (A)

Linthicum Heights
Lee, R. (SM)

Lutherville
Davis, R. J. (SM)

Mount Rainier
Kulipowski, E. F. (A)
Stark, H. L. (A)

North Beach
Distad, M. F. (SM)
Pearson, C. A. (A)
Pike, W. N. (A)
Rabb, J. W. (M)
Wilson, R. T. (A)

North Linthicum
James, C. L. (A)

Parkville
Bainbridge, A. S. (M)
Rohner, A. J. (M)
Walsh, P. S. (A)

Patuxent River
Balwanz, W. W. (A)
Horwitz, S. J. (A)
Nikonenko, P. V. (VA)
Sheve, H. C. (VA)
Wait, D. E. (A)

Phoenix
Abel, A. E. (SM)
Hicks, C. W. (SM)

Pikesville
McConnel, W. G. (SM)

Reisterstown
Duncan, R. S. (VA)

Relay
Gallagher, C. B. (A)

Riverdale
Mac Quivey, D. R. (M)
Withrow, W. E. (A)
Wright, D. (A)

Riverdale Heights
Chapman, R. W. (M)

Rockville
Julian, C. N. (A)

Severna Park
Koether, G. H., Jr. (A)

Silver Spring
Backus, C. D. (SM)
Beer, A. C. (A)
Bond, E. G. (M)
Braum, C. M. (VA)
Brown, C. W. (A)
Brown, E. B. (A)
Brown, J. S. (A)
Buckingham, S. A. (A)
Davies, G. L. (SM)
Gordon, D. I. (A)
Hardy, A. O. (A)
Heatwole, E. P. (A)
Hopgood, R. C. (A)
Hopkins, J. J. (A)
Huntoon, R. D. (A)
Jenkins, J. F., Jr. (A)
Kennedy, E. D. (VA)
Kirkland, G. I. (A)
Klink, G., Jr. (VA)
Knowles, W. S. (A)
Laker, E. F. (A)
Looney, H. C. (VA)
Marcinkowski, C. J. (A)
McDonald, L. W. (A)
McKeel, P. D. (VA)
Miles, K. G. (M)
Nicholson, T. (A)
Ostrander, R. S. (A)
Page, C. H. (A)
Poast, L. M. (VA)
Podbielniak, T. (A)
Preisman, A. (SM)
Quaintance, L. C. (VA)
Rice, L. W. (VA)
Robertson, A. L. (A)
Sanders, E. R. (VA)
Schram, S. M., Jr. (A)
Schroader, I. H. (A)
Schueler, J. J. (A)
Sharpless, W. R. (VA)
Smith, C. B. (A)
Smith, W. L. (A)
Steen, W. J. (A)
Sterling, G. E. (SM)
Sterner, J. E. (A)
Stewart, G. R. (A)
Terrell, R. L. (VA)
Tuve, M. A. (F)
Walters, L., Jr. (A)
White, N. (VA)

Solomons
Brown, C. H. (A)
Randall, H. L. (A)

Takoma Park
Adair, G. P. (SM)
Bevitt, W. D. (VA)
Ober, H. E. (A)
Ostaff, W. A. (M)
Paddison, L. J. (A)
Shepperd, I. J. (A)

Towson
Cave, E. L. (M)
Cook, H. A. (M)
Cosby, J. R. (A)
Edwards, R. B. (M)
Eltgroth, G. V. (SM)
Frazier, R. K. (A)
Frazier, R. V. (A)
Fund, S. R. (VA)
Garrison, L. (A)
Gordon, J. F. (A)
Hammond, J. W. (SM)
Hauck, V. D. (SM)
Hilliard, W. P. (VA)
Houck, J. W. (A)
Jones, W. G. (A)
Jones, W. M. (A)
Kitty, F. J. (A)
Luscombe, C. F. (M)
Malta, S. V. (A)
Norton, F. R. (SM)
Oosterling, H. J. (M)
Ridgely, N. R., Jr. (A)
Ruiz Díaz, E. (A)
Sands, L. G. (M)
Sims, W. H., Jr. (VA)
Smeltzer, R. F. (A)
Taylor, J. H. (A)
Vennes, H. J. (SM)
Warner, H. V. (A)
White, G. R. (A)

University Park
Fellows, W. N. (A)

MASSACHUSETTS

Allston
Chapman, R. C. (A)
Hare, G. H. (A)
Harring, D. M. (A)
Kingman, R. W. (A)

Andover
Zink, A. J., Jr. (M)

Arlington
Bergan, K. N. (A)
Bracken, J. F. (A)
Brown, D. F. (A)
Buck, D. G. (M)
Collins, J. S. (A)
Cowie, R. J. (VA)
Friend, J. L., Jr. (A)
Goodwin, A. B. (A)
Hibbert, J. J. (A)
Howell, A. H. (A)
Lamson, H. W. (F)
Smullin, L. D. (A)

Ashland
Muchow, A. J. (VA)

Athol
Tunnicliffe, W. W. (A)

Atlantic
Heap, S. S. (VA)

Attleboro
Burns, H. S. (A)

Attleboro Falls
Brastow, E. R. (A)

Auburndale
Cram, P. B. (A)
Gager, F. M. (VA)
White, A. D. (A)

Bedford
Harrison, J. R. (VA)

Belmont
Barry, F. N. (VA)
Benham, M. J. (A)
Cook, D. C. (A)
Dolbear, B. L. (SM)
Elliott, C. I. (A)
Hildebrand, J. G., Jr. (VA)
Hunt, F. V. (SM)
Lane, H. M. (SM)
Lathrop, L. L. (A)
Le Van, J. D. (A)
Ley, G. S. (M)
Luke, T. C. (A)
McAulay, W. H. (VA)
McElroy, P. K. (F)
Mercer, W. R. (A)
Rudenberg, H. G. (A)

Beverly
Biggs, O. H. (VA)
Briggs, R. S. (A)
Dillaby, E. F. (VA)
Porter, R. G. (VA)

Beverly Farms
Nason, C. H. W. (A)

Billerica
Paradise, F. H. (A)

Boston
Asmuth, J. L. (A)
Axel, P. (A)
Barbour, C. W., Jr. (A)
Berman, R. (A)
Bittner, B. J. (A)
Blythe, R. (M)
Boyog, G. A. (VA)
Cabot, G. E. (SM)
Charton, S. (A)
Chubb, C. F., Jr. (A)
Clark, S. F. (A)
Davidson, D. (A)
Dewey, G. C. (A)
Fano, R. M. (A)
Fink, E. J. (A)
Fredrick, A. H. (A)
Gregory, C. M. (A)
Grobecker, A. J. (A)
Hastings, T. M., Jr. (SM)
Hayes, H. V. (VA)
Hinman, R. J. (A)
Jones, R. H. (M)
Kadet, J. (A)
Kamm, G. N. (A)
Kelly, R. S. (A)
Koen, F. T. (A)
Kostecki, W. (A)
Loewenthal, M. (A)
Macnee, A. B. (A)
McGregor, R. B. (A)
Molla, J. J. (A)
Palmer, R. T. (VA)
Perron, R. K. (A)
Peterson, R. A. (A)
Powers, D. M. (A)
Proctor, W. G. (A)
Putnam, J. P. (VA)
Randolph, L. W. (A)
Rines, D. (VA)
Rogers, W. S. (A)
Schindler, J. A. (A)
Schott, F. W. (A)
Schwesinger, W. L. (VA)
Sheingold, A. (A)
Skitzki, P. (A)
Smith, C. M., Jr. (VA)
Smith, G. O. (M)
Stiles, W. J. (A)
Stoddard, J. P. (A)
Sullivan, T. J. (A)
Vanular, R. N. (A)
Vickerson, A. H. (A)
Waite, S. A. (VA)
Waltmire, W. A. (A)
Wingate, S. A. (A)

Brighton
Berman, E. (A)
Day, W. J. (A)
Fong, A. (A)
Fraim, E. G. (A)
Jacob, W. P. (M)
Lane, J. D. (A)
Morley, H. B. (M)
Paulsen, W. H. (A)
Vacca, R. H. (A)
Wallace, G. S. (VA)
Yurt, F. X. (VA)

Brockton
Fortier, O. V. (A)
Mac Adam, M. L. (M)

Brookline
Chu, L. J. (VA)
Deutsch, R. (A)
Dinsmore, E. G. (A)
Donovan, A. C. (A)
Ennis, A. G. (A)
Green, R. W. (A)
Guenther, J. H. (A)
Lett, R. P. (M)
Maling, H. F., Jr. (A)
Miller, A. (A)
Millman, J. (A)
Novick, M. (A)
Reintjes, J. F. (A)
Tuttle, D. F., Jr. (VA)

Cambridge
Adams, K. (A)
Alexander, R. M. (A)
Alford, A. (F)
Anderson, C. K. (A)
Artman, R. G. (A)
Barrett, E. (M)
Bartelink, E. H. (SM)
Batchelder, L. (VA)
Batchelor, J. C. (VA)
Battey, H. B. (A)
Becker, H. C. (A)
Beers, R. F. (A)
Beers, Y. (A)
Beranek, L. L. (SM)
Blackburn, J. F. (A)
Bogert, B. P. (A)
Bousquet, A. G. (SM)
Bowden, B. V. (SM)
Bowles, E. L. (SM)
Brockman, M. H. (A)
Burke, C. T. (F)
Buss, R. R. (M)
Cady, C. A. (SM)
Caywood, T. E. (A)
Chaffee, E. L. (F)
Clapp, J. K. (F)
Clapp, R. E. (A)
Cohn, S. B. (A)
Cole, A. D. (A)
Conway, J. F., Jr. (A)
Crandall, S. H. (A)
Crispell, H. L. (A)
Crosby, C. (M)
Curtis, C. T. (A)
Cushman, R. W. (M)
Davis, C. W. (A)
Dawes, H. H. (M)
DeHart, W. R. (A)
Downing, R. E. (VA)
Dunn, B. C., Jr. (A)
Eames, A. M. (A)
Eastham, M. (F)
Fallows, E. M. (A)
Fallows, R. S. (A)
Ferrier, D. T. (A)
Flammer, C. C. (A)
Fleisher, H. (A)
Fluharty, R. G. (A)
Foin, O. F., Jr. (M)
Garvey, E. P. (A)
Ghelardi, R. P. (A)
Gilman, M. A. (VA)
Goddard, E. G. (A)
Goldstein, D. (A)
Good, D. B. (A)
Granger, J. V. (A)
Gray, T. S. (SM)
Green, D. J. (A)
Griffin, S. J. (A)
Gross, E. E., Jr. (A)
Guillemin, E. A. (A)
Habich, R. C. (A)
Hadley, C. F. (M)
Hall, A. C. (A)
Halstead, W. K. (A)
Hammett, R. L. (A)
Hazelwood, C. F., Jr. (A)
Hersh, J. F. (A)
Hickman, R. W. (SM)
Hillger, R. E. (A)
Hodder, W. K. (A)
Hok, G. (VA)
Hollingsworth, L. M. (VA)
Hooper, J. R., Jr. (A)
Horton, J. W. (F)
Huggins, W. H. (A)
James, G. E. (A)
Jasberg, J. H. (A)
Jelatis, D. G. (A)
Jordan, W. H. (A)
Karplus, E. (F)
Kell, R. E. (A)
Kennedy, F. (A)
Kerr, D. E. (VA)
Kimball, R. E. (A)
King, R. W. P. (SM)
Kirkland, R. E. (A)
Klick, C. C. (A)
Knauss, H. C. (A)
Kraus, J. D. (SM)
Kreezer, G. L. (A)
Kunz, K. S. (A)
Kuper, J. B. H. (SM)
Lawrance, R. B. (A)
Lee, J. J., Jr. (A)
Lentz, J. J. (A)
Lewis, G. A. (A)
Littlejohn, H. C. (A)
Logemann, H., Jr. (A)
Lyman, F., Jr. (VA)
Mains, M. C. (A)
Marcuvitz, N. (VA)
Margolin, B. (A)
Mattingly, R. L. (M)
McConnell, R. A. (VA)
McCoy, R. T. (A)
McGuigan, W. D. (A)
Meece, E. W. (A)
Middleton, D. (M)
Mimno, H. R. (VA)
Morrow, C. (A)
Mosher, R. K. (A)
Moster, C. R. (A)
Murphy, A. F. (A)
Nelson, R. A. (A)
Niles, J. R. (A)
Nottingham, W. B. (VA)
O'Bryan, H. M. (M)
O'Day, M. (VA)
Ohlsson, R. L. (A)
Papas, C. H. (A)
Parker, E. O., Jr. (A)
Peterson, A. P. G. (VA)
Phillips, H. B. (SM)
Pierce, G. W. (F)
Radford, W. H. (SM)
Rambo, W. R. (A)
Richmond, H. B. (F)
Roberts, S. (M)
Robinson, P. E. (A)
Roth, W. (A)
Rupert, G. N. (A)
Ruplenas, R. J. (A)
Samour, S. (A)
Sarasohn, H. M. (A)
Saylor, W. R. (A)
Schreiner, K. E. (A)
Scott, H. H. (SM)
Seely, S. (SM)
Shaw, H. S. (F)
Sinclair, D. B. (F)
Sinsheimer, R. L. (A)
Small, B. I. (A)
Smith, M. T. (SM)
Sodaro, J. F. (A)
Soderman, R. A. (M)
Speed, D. K. (A)
Stallard, R. L. (A)
Stockman, H. E. S. (SM)
Strader, F. (A)
Strandberg, M. W. P. (A)
Stratton, J. A. (F)
Svihel, B. T. (A)
Thiessen, A. E. (SM)
Thomson, E. C. (A)
Thurston, J. N. (A)
Thurston, W. R. (A)
Timbie, W. H. (SM)
Tittle, C. W. (A)
Tobin, L. W. (A)
Tomiyasu, K. (A)
Tucker, C. E. (SM)
Tyson, O. A. (A)
Van Atta, L. C. (SM)
Vane, A. B. (A)
Waldschmitt, J. A. (A)
Wallman, H. (A)
Waterman, C. H. (A)
Webster, W. G. (SM)
Wentworth, A. M. (A)
West, S. F. (A)
Westphal, W. B. (A)
Wheatland, D. P. (A)
White, J. F. (A)
White, W. P. (A)
Whitby, O. W. (A)
Whitmer, R. M. (VA)
Wiener, F. M. (VA)
Wildes, K. L. (A)
Wilson, D. G. (A)
Wilson, R. D. (A)
Wing, A. H., Jr. (SM)

Winternitz, T. W. (A)
Woodward, C. A., Jr. (A)
Woodward, R. H. (A)
Wooley, R. L. (A)
Worthen, C. E. (SM)

Canton
Geoghegan, E. D. A. (VA)

Cape Cod
Whittemore, H. B. (A)

Charlton Depot
Wakefield, J. M. (A)

Chelsea
Ginsberg, I. (A)

Cheshire
Leonard, S. C. (VA)

Chestnut Hill
Porter, J. D. (A)
Rappaport, M. B. (VA)

Chicopee
Brodacki, P. F. (A)

Cochituate
Halder, G. W. (A)
Tuller, W. G. (M)

Concord
Campbell, C. A. (A)
Nelson, E. K. (A)
Tuttle, W. N. (VA)

Danvers
Cann, A. F. (A)
Carter, G. E., Jr. (A)
Fezer, H. (A)

Dedham
Austin, J. F. (A)

Dorchester
Chaffee, R. E. (M)
Ciscel, B. H. (M)
Clarke, R. S. (VA)
Fogg, E. W. (A)
Freedman, J. L. (A)
Harrison, R. P. (A)
Kearney, J. W. (A)
Lipkin, H. J. (A)
Renner, G. W. (A)
Reynard, A. I. (A)
Rubin, M. D. (A)

Dover
McCormack, R. L. (A)
Mills, H. J. (VA)

Duxbury
Lovering, C. B., Jr. (A)

East Boston
Lopez, A. F. (A)
Massaro, H. J. (A)
Pesaturo, E. R. (A)

East Braintree
Hollis, H. H. (SM)

Easthampton
Pennoyer, R. T. (VA)

East Natick
Ingerson, K. E. (A)

East Walpole
Reed, W. O. (VA)

East Weymouth
Schroth, L. C. (A)

Everett
Brown, E. B. (A)
Kaden, E. A. (A)

Fairhaven
Kahn, L. (VA)

Fall River
Davenport, H. R. (VA)
Ryan, J. E. (A)

Fitchburg
Alexander, D. C. (A)

Foxboro
Dudley, T. C. (A)
Greenleaf, F. D. (A)
Messenger, L. M. (A)

Framingham
Woodworth, J. D. (A)

Framingham Center
Brooks, F. E. (A)

Gardner
Engman, G. E. (A)

Gloucester
Benham, J. B. (A)
Hammond, J. H., Jr. (SM)
Ktistes, P. J. (A)
Lawson, N. H. (A)

Great Barrington
Hemmes, R. T. (A)
Sleeper, M. B. (SM)

Greenwood
Haley, S. C. (A)

Hingham
Drisko, B. B. (VA)
Harris, C. C. (SM)
Phelps, R. E. (VA)
Pratt, F. (VA)
Wood, J. O. (A)

Holliston
Garceau, L. (VA)

Hudson
Kaulback, H. D. (A)

Hyde Park
Holt, W. (A)

Ipswich
Baker, J. R., Jr. (A)
Serniuk, W. (A)

Jamaica Plain
Alphen, P. F. (A)
Bishop, H. M. (A)
Downing, J. T. (A)
Hanopol, L. (VA)
Hinckley, G. A. (A)
Pihl, G. E. (A)

Lawrence
Pray, E. B. (A)

Lexington
Bowker, W. H. (A)
Dearborn, F. K. (A)
Hale, R. C. (A)
Hall, W. M. (SM)
Pilkington, E. J. (VA)
Webb, H. A. (VA)

Lincoln
Brown, W. C. (VA)
Wellman, B. (VA)

Longmeadow
Brackett, Q. A. (SM)
Cohen, M. (VA)
Gostyn, E. (A)
Hadley, A. M. (A)

Lowell
Atwell, R. G. (A)
Brown, H. W. (VA)
Cielakie, A. E. (A)
Giddis, A. N. (A)
Landry, L. H. (VA)

Lynn
Bauer, P. S. (VA)
Foss, F. A. (A)

Malden
Caywood, R. W. (A)
Preston, G. D. (A)
Sheridan, E. W. (A)

Manchester-By-the-Sea
Wildman, D. C. (A)

Mansfield
Dean, L. W. (A)

Marblehead
Chun, H. H. (VA)
Dane, F. W. (SM)
Fricks, R. E. (A)
Harding, R. W. (A)
Hoffman, M. C. (VA)
Lorber, J. F. (M)
Riordan, N. F. (A)
Stromeyer, C. F. (VA)

Marion
Jackson, W. C. (A)

Mattapan
Miller, J. L. (A)
Robinson, S. (A)

Medford
Di Mattia, A. L. (A)
Hammond, G. H. (A)
Ivers, J. H. (A)
Lambert, T. M. (A)
Mingins, C. R. (VA)
Stevens, C. A. (A)
Walkley, S. E. (A)

Methuen
Lee, F. N. (A)

Milford
Kurlansky, S. (A)
Tinkham, M. E. (A)

Millis
Longfellow, B. S. (VA)

Milton
Bradshaw, D. B. (A)
Bulger, J. F. (A)
Finkelstein, N. A. (A)
O'Day, A. C. (A)
Pritchard, E. M. (VA)
Rochester, N. (A)

Nahant
Whittier, C. H. (A)

Natick
Stetson, R. B. (A)

Needham
Henry, J. M. (VA)
Satterlee, H. A. (A)
Stetson, H. T. (VA)
Whittier, E. W. (VA)

New Bedford
Bartlett, G. W. (A)
Klemm, G. H. (A)
Kurgan, G. J. (A)
Packard, K. N. (A)
Teixeria, N. A. (A)
Turner, R. P. (A)

Newburyport
Wood, W. H., Jr. (A)

Newton
Goldsmith, J. (M)
Moose, L. F. (A)
Morton, G. E. (A)
Nelson, J. R. (SM)
Pekin, H. T. (SM)
Pitts, F. D. (VA)
Rockwood, A. C. (SM)
Sanders, R. C., Jr. (VA)
Wellons, R. S. (A)

Newton Center
Hauser, W. H. (A)
Hornung, J. L. (SM)
Ludwig, J. H. (VA)
Pickard, G. W. (F)
Prise, W. J. (A)
Shore, L. (A)
Zottu, P. D. (F)

Newton Highlands
Cole, B. R. (A)
Darden, R. R., Jr. (M)
Krim, N. B. (A)

Newton Lower Falls
Atwood, W. L. (A)

Newtonville
Hartford, W. W., Jr. (A)
Karp, H. (A)
Schutz, H. (M)

North Abington
Getchell, W. A., Jr. (A)

North Adams
Allison, W. M. (A)
Beverly, N. E. (A)
Dorst, S. O. (A)
Peters, R. (A)
Quirk, C. J. (A)
Shuey, L. S. (A)
Simms, O. E. (A)
Tyler, R. H. (A)

Northampton
Allured, J. B. (A)

North Attleboro
McArthur, D. (A)

North Easton
Ames, D. (A)

North Quincy
Bivins, W. P. (A)

North Reading
Millen, J. (VA)

North Weymouth
Toivonen, E. O. (A)

Norwood
Kleps, E. W. (A)

Orange
Rivers, R. A. (A)

Pittsfield
Harrison, K. E. (A)
Johnson, C. F. (A)
Podolsky, L. (VA)

Quincy
Grass, A. M. (VA)
Poté, A. J. (A)

Reading
Frater, G. E. (A)
Rose, J. T. (A)

Rockport
Stone, J. E. (A)

Roslindale
Ausin, H. A. (A)
Goodway, J. T. (A)
Hurley, W. A. (A)
Miller, W. T. (A)
Palmieri, P. J. (A)

Roxbury
Garber, S. H. (A)
Wolf, S. H. (A)

Salem
Perkins, G. D. (A)
Ropes, G. F. (A)
Swan, R. A., Jr. (VA)
Tuckerman, L. S. (A)

Sharon
Cushman, R. W. (A)
Pearce, W. B. (M)

Somerville
Athey, S. W. (A)
Burns, L. L., Jr. (A)
Combie, A. A. (A)
Hisamoto, R. M. (VA)
Kolster, C. C. (SM)
MacMillen, W. J. (A)

South Attleboro
Kray, E. (A)

South Braintree
Saxe, R. K. (VA)

Southbridge
Black, E., Jr. (A)
Harges, M. T. (M)
Harvey, C. A. (A)
Lorch, J. (M)
MacConnell, C. W. (A)
Stuart, R. M. (A)
Tillyer, E. D. (SM)
Walden, G. R. (A)
Wells, J. M. (SM)

South Hamilton
Ulrich, V. K. (VA)

South Weymouth
Coleman, A. F. (M)
Fisher, A. B. (M)
Hill, H. F. (VA)
Osgood, F. E. (A)

Springfield
Bassett, E. D. (A)
Brown, L. L. (A)
Cameron, J. A. (VA)
Creaser, I. (A)
Cushing, T. F. (VA)
Fountain, L. R. (A)
Fratar, F. J. (M)
Gurley, J. W. (A)
Houser, J. A. (A)
King, A. D. (A)
Longtine, E. J. (A)
Plummer, C. H. (A)
Reilly, L. A. (A)
Sharrard, L. L. (A)
Smith, W. M. (SM)
Tuerck, W., Jr. (A)
Webber, F. G. (VA)

Stoughton
Mackiernan, D. S., Jr. (A)

Swampscott
Brynes, K. (A)
French, I. F. (A)
Parker, J. D. (VA)
Zimmermann, H. J. (M)

Taunton
Barker, D. R. (VA)

Uphams Corner
Thompson, N. (A)

Waban
Morrison, L. H. (A)
Stanton, R. S. (VA)

Wakefield
Boland, T. J. (A)
Freeman, L. S., Jr. (A)
Whitford, J. R. (A)

Waltham
Abate, A. (M)
Alstad, N. J. (A)
Booth, H. M. (SM)
Duffy, M. P. (A)

Ellis, L. A. (A)
Gottier, T. L. (VA)
Kramer, A. W. (M)
Lindahl, H. C. (A)
Loomis, G. W. (A)
Lowery, W. E. (M)
Schmitz, W. (M)
Smith, H. J. (VA)
Stiefel, K. T. (M)
Urlovic, W. C. (A)
Van Aller, H. T. (A)
Warner, S. D. (A)
Warriner, C. H. (A)
Westcott, V. C. (A)
Wood, R. (SM)

Ware
Labossiere, E. R. (A)

Watertown
Debs, R. J. (A)
De Shon, H. C. (A)
Downs, G. L. (A)
Field, R. F. (SM)
Hobbs, C. F. (M)
Randall, E. L. (A)
Read, V. H. (A)
Szekely, G. (A)

Wellesley
Brainerd, H. B. (A)
Cage, J. M. (SM)
McDowell, L. S. (SM)
Suter, H. (A)

Wellesley Hills
Eager, M. (SM)
Humphrey, G. S. (A)
Karcher, E. R. (A)
Sise, A. F. (A)
Weeks, P. T. (SM)

Westboro
Wyman, A. W. (A)

West Lynn
White, A. (A)

West Newton
Bawden, M. R. (A)
Dawson, J. W. (VA)
Evans, G. E. (M)
Hergenrother, R. C. (VA)
Rohner, G. J. (A)

Weston
Gross, F. A. (VA)
Hills, C. E., Jr. (VA)
Ready, W. A. (SM)
Stabler, H. P. (A)

West Roxbury
Bazzy, W. L. (A)
Haddad, S. G. (A)
Weinberg, L. (A)

West Somerville
Erickson, P. W. (M)

West Springfield
Burnett, K. H. (A)

Westwood
Schultz, M. A. (A)
Washburn, C. A. (A)

Whitinsville
Hagopian, J. J. (A)

Whitman
Blanchard, E. P. (A)
Pennini, R. V. (A)

Williamstown
Curry, J. R. (A)

Winchester
Barnes, J. L. (SM)
Bowne, W. L. (A)
Browning, G. H. (SM)
Cade, P. J. (A)
Hill, D. B. (A)
Hilsdale, F. A. (A)
McFarlane, D. J. (A)
Wood, J. A., Jr. (SM)

Wollaston
Baird, H. S. (A)
Bengle, L. P. (A)
Cummings, S. J. (A)
Edmonston, A. S. (A)
Voorhies, H. G., Jr. (A)
Whitham, G. E. (A)

Woods Hole
McCurdy, R. J., III (A)
Stacey, D. S. (A)

Worcester
Anderson, A. W. (A)
Barnard, G. A., III (A)
Browning, E. A. (VA)
Connolly, J. K. (A)
Fernane, J. (A)

Johnson, G. E. (A)
Lekberg, D. G. (A)
Newell, H. H. (SM)
Woodward, J. D. (SM)

MICHIGAN

Allegan
Ball, I. D. (SM)
Boll, R. W. (A)
Borsi, P. N. (A)

Allen Park
Fisk, R. H. (A)
Schultz, F. V. (SM)

Ann Arbor
Attwood, S. S. (SM)
Campbell, G. R. (VA)
Cline, J. F. (A)
Dow, W. G. (SM)
Early, H. C. (A)
Frederick, J. R. (A)
Fung, K. W. (A)
Holland, L. N. (SM)
Kroll, R. T. (A)
Liedholz, G. A. (A)
Miller, G. J. (A)
Moehl, K. R. (A)
Needle, J. S. (A)
Oyster, D. E. (A)
Podewils, N. R. (A)
Pride, D. W. (A)
Ringwalt, D. L. (A)
Sperling, B. R. (A)

Bangor
Walker, H. C. (A)

Baroda
Dunham, L. F. (A)

Bay City
Falor, O. K. (A)
Johnson, K. E. (A)

Berkeley
Thrun, A. G. (VA)

Birmingham
Burke, W. B. (A)
Cassidy, R. J. (M)
Masters, W. S. (A)
Weaver, R. D. (VA)
Zatorsky, E. F. (VA)

Cadillac
Nelson, W. H. (SM)

Caro
Bawtinheimer, C. E. (A)

Charlotte
Eggleston, A. E. (A)
Gay, P. S. (VA)
Martin, D. (VA)
Nelson, R. F. (A)
Schrand, E. J. (A)
Wells, L. V. (VA)

Clio
Reid, E. H. (A)

Crystal Falls
Kaarlela, A. W. (A)

Dearborn
De Pool, N. S. (A)
Howard, L. R. (A)
Murray, R. P. (A)
Roggenbuck, R. A. (A)
Scherba, M. B. (A)

Detroit
Agren, R. (A)
Albers, J. M. (A)
Allen, J. W. (A)
Almas, S. L. (A)
Augustine, J. W. (A)
Barr, B. (A)
Berry, F. R. (A)
Brule, C. G. (A)
Buchanan, A. B. (SM)
Buckwitz, S. (A)
Butcher, J. H. (A)
Carter, G. W. (SM)
Clark, E. H. (A)
Clark, N. M. (A)
Coates, A. L. (VA)
Coles, K. E. (A)
Cook, R. H. (A)
Crockford, C. J. (A)
Dacken, L. L. (VA)
Daugherty, R. M. (M)
Davis, C. (VA)
Dellenbaugh, F. S. (SM)
Denstaedt, E. C. (SM)
Donovan, R. D. (A)
Dougherty, J. D. (A)
Drouillard, C. T. (A)
Duffy, M. N. (A)
Eisen, C. G. (VA)
Fachilla, M. (A)
Finger, L. C. (A)
Fitzner, B. J. (A)
Foreman, L. J. (A)
Friedenthal, A. (A)
Gill, C. G. (A)
Goodrich, H. C., Jr. (A)
Handel, N. E. (M)
Hanes, M. (A)
Hansen, D. K. (A)
Harp, R. C. (A)
Harriman, D. W. (A)
Hartz, F. M. (A)
Hess, H. M. (VA)
Huffmaster, G. W. (A)
Hughes, E. J. (M)
Hungerford, R. S. (A)
Johnson, G. D., Jr. (VA)
Kanfer, R. (A)
King, B. A., Jr. (A)
King, L. E. (VA)
Klinkhamer, A. J. (A)
Kocher, C. F. (M)
Kranz, H. E. (M)
Lawrence, S. C. (VA)
Le Barre, S. D. (A)
Lee, E. H. I. (SM)
Lehmann, H. W. (A)
Liston, M. D. (A)
Lyman, H. J. (SM)
Madgett, W. H. (A)
Manning, S. R. (VA)
Marmont, G. H. (M)
McDonald, E. D. (A)
McDonnell, W. F. (A)
McFatridge, J. E. (A)
Miller, M. L. (VA)
Miller, O. V. (VA)
Nathan, R. (M)
Nelson, C. O. (A)
Olson, D. R. (A)
Osborne, R. L. (VA)
Peterkin, E. W. (A)
Preston, F. F. (A)
Radin, B. G. (A)
Ramsay, R. D. (A)
Rissi, T. L. (A)
Roush, F. H. (VA)
Ryan, G. E. (VA)
Satullo, A. R. (A)
Scanlan, R. J. (VA)
Schmeisser, K. R. (A)
Schultz, G. A. (A)
Scrimshire, J. B., Jr. (A)
Severson, E. O. (A)
Shepley, L. (VA)
Stewart, A. W. (M)
Stone, C. S. E. (A)
Stone, J. (A)
Tank, H. F. (VA)
Teague, A. G. (A)
Tompos, S. F. (A)
Torode, S. W. (A)
Tracht, P. A. (A)
Vigeant, G. H. (A)
Walton, H. E. (A)
Warner, V. S. (A)
Webb, A. E. (A)
Wikolaski, W. O. (A)
Williamson, L. C. (A)
Wilton, V. A. (A)
Ziniuk, M. A. (A)

Dundee
Broughton, G. E. (A)

Durand
Gorton, E. D. (A)

East Lansing
Osborn, B. K. (M)
Strelzoff, J. A. (A)

Edwardsburg
Christophel, G. H. (A)

Escanaba
Anthony, D. J. (A)

Farmington
Swarthout, K. L. (A]

Ferndale
Amman, E. A. (A)
Mooney, S. J. (A)

Flint
Blue, N. E. (A)
Donbar, C. F. (A)
Fallain, F. D. (VA)
Rockafellow, S. C. (A)

Freeland
Carpenter, R. H. (VA)

Grand Rapids
Abfalter, H. F. (VA)
Berg, R. C. (A)
Blett, E. B. (VA)
Carlson, O. E. (A)
Davis, R. L. (VA)
Dyke, E. (A)
Frontjes, M. (A)
Haagenson, A. (VA)
Haines, E. D. (A)
Jones, C. B. (SM)
Stuart, B. (A)

Grass Lake
Bartels, A. H. (A)

Grosse Pointe
Woods, L. J. (SM)

Grosse Pointe Farms
Scripps, W. E., II (A)

Grosse Pointe Park
Guadagnino, C. (A)

Grosse Pointe Woods
Frank, G. C. (A)
Stahl, T. H., Sr. (A)

Hastings
Branch, R. (VA)

Highland Park
Byerlay, H. L. (SM)
Chapman, F. W. (A)
Gould, H. S. (VA)
Hubbard, W. B. (A)
Newcomb, G. O. (A)
Stinson, R. C. (VA)

Holland
Tysse, H. L. (VA)
Westrate, M. C. (A)

Jackson
Best, C. A., Jr. (A)
Cottrell, M. (VA)
Freeman, S., Jr. (A)
Gelzer, J. R. (M)
Haag, M. W. (VA)
Horrell, M. W. (M)
Jelen, M. J. (VA)
Knubbe, H. (VA)
McMullin, R. W. (A)
Nason, D. B. (M)
Nielsen, H. V. (VA)
Smale, V. E. (A)
Wirtanen, C. W. (A)

Kalamazoo
Covell, A. E. (A)
Fetzer, J. E. (SM)
Lee, C. E. (A)
Owsiany, A. R. (A)
Williams, R. O. (SM)
Woods, O. R. (A)

Lansing
Freer, J. E. (A)
Wirth, M. H. (A)

Lincoln Park
Puttick, A. W. (A)
Saigeon, N. D. (VA)

Marshall
Walker, J. R. (A)

Milford
Huber, P. (VA)

Mount Clemens
Baruch, P. T. (A)

Muskegon
Castenholz, F. E. (M)
Hewitt, C. T. (VA)
Krivitzky, G. (VA)

Negaunee
Blee, G. C. (VA)

Ottawa Lake
Buyaki, P. P. (A)

Paw Paw
Evans, R. J. (A)

Petoskey
Inglis, A. F. (A)

Plymouth
Reber, E. (A)

Pontiac
Cook, W. N. (A)
Ragsdale, W. H. (A)

Port Huron
Tuxill, A. R. (A)

Reading
Easterday, R. B. (A)

Roscommon
Slocum, O. B. (A)

Roseville
Meltvelt, H. (M)

Royal Oak
Barnes, R. R. (A)
Frincke, P. O. (VA)
Gordon, B. G. (A)
Larime, L. H. (M)
Tieman, C. R. (A)
Wycoff, C. T. (A)

Saginaw
Brenner, G. J., Jr. (A)
Kelb, A. J. (A)

Saint Joseph
Zick, E. J. (A)

South Haven
Burge, F. L. (A)

Spring Lake
Rogers, J. S. (A)

Stevensville
Williams, A. P. (A)

Three Rivers
Perkins, M. L. (VA)

Traverse City
Biederman, L. (M)
Dagle, E. F. (A)

Wyandotte
Clark, R. K. (VA)
Kulik, J. J. (A)
Moore, J. B. (VA)
Wesser, C. H. (SM)

Ypsilanti
Augustus, L. M. (VA)

Zeeland
McKowen, P. B. (A)

MINNESOTA

Albert Lea
Jacobson, M. V. (A)

Alexandria
Langer, W. A. (A)

Anoka
Anderson, I. H. (M)
Collier, G. X. M. (VA)
Peterson, H. L. (A)

Austin
Alderson, R. C. (A)

Champlin
Lautzenheiser, R. W. (A)

Chisholm
Dolhar, J. L. (A)

Dawson
Hanson, R. L. (A)

Duluth
Hanson, A. R. (A)
Holmbeck, C. H. (A)
Jacobson, T. E. (A)
Klopp, A. E. (A)
Lockwood, N. (A)
Pennie, D. F. (A)
Persons, C. B. (SM)
Ross, R. H. (VA)

Dundas
Babcock, W. L. (A)

Elmore
Foley, H. J. (A)

Fort Snelling
Spong, D. C. (A)

Keewatin
Osojnicki, J. J. (VA)

Lake Bronson
Naslund, R. S. (VA)

Luverne
Martin, C. A. (VA)

Mankato
Houts, J. J. (A)

Minneapolis
Allison, R. E. (SM)
Anderson, G. P. (A)
Anderson, W. M. (A)
Aro, L. J. (A)
Barron, F. E. (A)
Bellinger, C. E. (A)
Carney, P. G. (VA)
Church, G. H. (A)
Culbertson, G. K. (A)
Dahlberg, J. O. (A)
Doelz, M. L. (M)
Ecklen, C. E. (A)
Eckstein, E. A. (A)
Engelman, C. W. (M)
Exner, W. L. (A)
Fleming, M. N. (A)
Gates, C. E. (A)
Hallaway, A. B. (M)
Hartig, H. E. (SM)
Headen, H. V. (A)
Herrmann, F. W. (M)
Jacobsen, G. K. (VA)
Johnson, R. A. (A)
Kerns, D. N. (A)
Knox, M. E. (M)
Laitinen, W. R. (A)
Lehnert, W. E. (A)
Lender, G. A. (A)
Ludwig, M. R. (M)
Markusen, D. L. (A)
McCartney, H. S. (M)
McGinnis, W. J. (A)
Olson, R. L. (A)
Premack, J. (A)
Quist, W. G. (A)
Renk, B. J. (A)
Robb, G. G. (A)
Sabine, L. E. (A)
Schafer, C. R. (A)
Scholer, R. E. (A)
Schrader, W. (A)
Schuck, O. H. (M)
Schulz, S. W. (A)
Sherman, J. M. (SM)
Stinger, H. J. (A)
Strother, F. P. (A)
Thompson, P. (A)
Webb, J. S. (VA)

New Prague
Robel, R. B. (A)

Northfield
Culver, C. A. (SM)
Jensen, M. C. (M)

Red Wing
Lee, G. M. (A)

Renville
Francis, O. T. (VA)

Robbinsdale
Sultany, S. (A)

Rochester
Boland, R. K. (A)
Clarke, F. C. (M)
Jones, R. E. (A)
Shonyo, S. B., Jr. (A)

Saint Cloud
Pramann, H. J. (A)
Witschen, R. B. (A)

Saint Louis Park
Lane, A. D. (A)
Larson, H. G. (A)
Swendson, L. G. (M)
Underhill, C. E. (A)

Saint Paul
Allison, S. H. (A)
Christenson, C. K. (A)
Coil, N. B. (M)
Corkill, J. F. (M)
Effertz, C. H. (A)
Fricker, J. N. (M)
Goodell, J. D. (A)
Hayden, L. B. (A)
Hill, J. L. (A)
Jensen, W. (M)
Kelsey, J. R. (A)
Klug, J. D. (A)
Melius, F. G. (A)
Murray, D. A. (VA)
Nielsen, R. L. (A)
Stewart, J. W. (A)
Stodolka, J. P. (A)
Trimmer, J. P. (A)
Webber, L. E. (A)
White, D. E. (A)

Twin Valley
Bjerke, J. W. (A)

Tyrol Hills
Anderson, R. L. (A)

Waseca
Griffith, B. W., Jr. (A)
Hager, F. M., Jr. (A)
Johnson, E. F. (VA)
Olander, L. W. (VA)
Pritchett, W. S. (A)
Swank, W. B. (A)

Wayzata
Olson, D. O. (A)
Young, S. B. (VA)

Willmar
Cole, D. R. (A)
Jessup, C. M. (A)

Winona
Hoffman, J. D. (A)

MISSISSIPPI

Baldwyn
Peach, S. E. (A)

Biloxi
Young, W. E. (A)

Corinth
Anderson, J. D. (A)

Gloster
Brown, W. L. (A)

Greenville
Kittleman, M. (A)

Greenwood
Perkins, E. G. (A)
Soward, R. (A)

Houston
Reid, J. B. (A)

Kessler Field
Wachter, J. W. (A)

Laurel
Patrick, W. L. (A)

McComb
Sanders, R. L. (A)

Minter City
Moreland, H. H. (A)

Pascagoula
Moyer, G. E. (A)

Yazoo City
Muirhead, L. R. (A)

MISSOURI

Camp Crowder
Moench, H. A. (VA)
Schwartz, R. F. (A)

Cape Girardeau
Hirsch, O. C. (M)

Clayton
Jablonsky, R. D. (A)
Vencill, G. J. (A)

Columbia
Lamb, J. F. (A)
Wallis, C. M. (SM)

Ferguson
Rekart, A. F. (VA)

Glendale
Nickles, R. W. (A)
Rustemeyer, G. L. (A)

Independence
Barron, R. C. (A)
De Pugh, R. B. (A)
Forristal, J. A. (A)
Hall, M. E., Jr. (A)
Moler, A. R. (VA)

Jefferson City
Gillespie, E. R. (A)
Milam, J. C. (A)

Joplin
Boege, F. G. (A)
Collins, E. M. (A)
Meador, R. E. (A)

Kansas City
Amsler, B. E. (A)
Barker, F. L. (A)
Bergren, A. L. (A)
Berry, F. M. (A)
Blair, J. N. (A)
Brush, L. V. (A)
Busse, D. E. (M)
Cook, N. W. (A)
Cooke, R. B. (A)
Cotts, A. C. (A)
Cox, E. E. (A)
Curtis, C. V. (VA)
Dunn, J. R. (A)
Dutton, O. B. (A)
Earp, J. A. (M)
Easterday, M. R. (A)
Foster, C. L. (M)
Fouts, A. L. (VA)
Francis, G. A. (A)
Francis, M. C. (A)
Franklin, J. C. (SM)
Fromhold, H. A. (A)
Gebhardt, P. B. (A)
Goldenberg, H. E. (VA)
Graf, W. P. (A)
Hall, E. G. (A)
Harmon, R. C. (A)
Heffelfinger, J. B. (A)
Heister, C. F. (VA)
Hieronymus, T. G. (A)
Howell, P. N. (A)
Hoyle, W. E. (A)
Hunt, J. M. (A)
Inderwiesen, F. H., Jr. (A)
Jensen, L. J. (A)
Jones, T. L. (A)
Keith, J. M. (A)
Kirkpatrick, C. H. (A)
Krahl, A. K. (A)
Lane, C. A., Jr. (A)
McDonell, W. J. (VA)
Mead, R. S. (A)
Morgan, H. K. (SM)
Morrow, J. E. (A)
Phelan, J. D. (A)
Riddle, L. G. (A)
Salzer, C. E. (VA)
Schilling, J. T. (A)
Schwerin, E. B. (A)
Shirling, G. K. (A)
Simmons, C. O. (A)
Stuhrman, A. P. (A)
Swanson, R. E. (A)
Taylor, G. L. (SM)
Troeglen, K. (SM)
Uhrig, R. B. (A)
Van Gundy, C. G. (VA)
Wagner, F. R. (M)
Weedfall, W. W. (A)
White, R. N. (M)
Wilcox, J. V. (SM)
Wimp, L. F. (A)
Wolfskill, R. F. (A)
Woodward, M. W. (SM)

Kirkwood
St. Vrain, W. E. (A)
Van Sickle, G. W. (A)

Normandy
Volk, J. A. (VA)

North Kansas City
Bishop, W. T. (VA)
Corcoran, A. E. (A)
Kurth, H. H. (M)
Lewis, W. R. (A)
Runkle, E. G., Jr. (A)
Rypstra, B. (A)

Overland
Taylor, J. J. (A)

Poplar Bluff
Milster, J. L. (A)

Richmond
Basham, R. C. (A)

Richmond Heights
Cummings, G. M. (VA)

Rolla
Frame, F. H. (VA)
Washburn, E. L. (A)

Saint Joseph
Abercrombie, J. B. (A)
Damm, F. (A)
Hendry, E. L. (A)
Koch, J. W. (M)

Saint Louis
Allmeyer, W. C. (A)
Andersen, A. R. (A)
Brent, L. L. (A)
Bubb, F. W., Jr. (A)
Cloyd, L. W. (VA)
Coe, R. L. (M)
Crouch, M. F. (A)
Daly, H. H. (A)
Devereux, J. (A)
Dickman, K. W. (A)
Ford, E. V. (A)
Forst, J. A. (A)
Groeteke, E. A. (VA)
Haines, R. A. (A)
Harrison, C. E. (A)
Hildenbrand, K. (A)
Honeywell, H. H. (A)
Justice, J. W. (A)
McAdam, J. C. (A)
McDaniel, O. S. (SM)
Merry, J. M. P. (A)
Miller, B. B. (A)
Mollman, L. A. (A)
Potter, C. A. (A)
Quest, R. G. (A)
Richardson, E. E. (A)
Richardson, R. P. (A)
Roewekamp, E. T. (A)
Rueppel, G. E. (A)
Schwarz, C. J. (A)
Shepard, W. D. (VA)
Siepman, A. B. (A)
Sigman, H. M. (A)
Stephens, E. T. (A)
Stertmann, W. E. (A)
Thielen, H. H. (A)
Upton, L. (A)
Van Wambeck, S. H. (A)
Vogel, E. H. (A)
Waelterman, E. H. (A)
Wiese, A. H. (A)
Yarger, C. R. (A)
Zehr, N. J. (VA)

Springfield
Bauer, F. (VA)
Curry, W. F. (A)
Jones, J. W. (A)
Sigmon, L. C. (VA)
Simpson, O. D. (A)

University City
Chapin, W. R. (A)
Glasgow, R. S. (SM)
Hiestand, D. W. (A)
Roberts, E. M., Jr. (A)

Warrensburg
Sweet, R. A. (A)

Webster Groves
Harvey, H. (SM)

Worthington
Schuster, H. E. (A)

MONTANA

Anaconda
Antonich, P. L. (VA)

Butte
Beardslee, C. E. (A)
Blankmeyer, W. H. (A)
Howe, R. H. (VA)
Laurvick, A. (A)
Pentilla, W. R. (A)

Great Falls
Lopuch, A. J. (A)
Parker, J. E. (VA)
Wagner, C. E. (A)

Harlowton
Manuel, W. O. (A)

Laurel
Hageman, K. G. (A)

NEBRASKA

Beaver Crossing
Luebbe, L. A. (A)

Crete
Franta, A. L. (A)

Grand Island
Jensen, G. L. (VA)

Hastings
Coates, C. L., Jr. (A)

Holdrege
Lindstrom, R. A. (A)

Kearney
Beshore, P. S. (VA)
Griffin, D. C. (A)

Lincoln
Beams, D. W. (A)
Bullock, M. W. (M)
Dairiki, S. (A)
Flyr, J. G. (A)
Gaba, H. F. (A)
Geis, L. W. L. (A)
Jensen, J. C. (SM)
Michal, L. V. (M)
Norris, F. W. (SM)
Thomas, M. E. (A)
Wight, V. H. (A)
Winkler, C. W. (VA)

Lodgepole
Stevens, J. E. (A)

Omaha
Bennett, A. E. (A)
Dunbar, B. L. (A)
Flynn, G. (A)
Herold, J. L. (A)
Kotera, W. J. (VA)
Tharp, L. D. (A)

Saint Edward
Barber, F. (A)

Table Rock
Housley, D. G. (A)

NEVADA

Las Vegas
Partridge, P. N. (M)

Sparks
Wholey, W. B. (M)

NEW HAMPSHIRE

Bethlehem
Turner, R. W. (A)

Concord
Evans, C. B. (M)

Dover
Farrell, L. H. (A)
Wroblewski, T. (A)

Exeter
Wilson, W. (F)

Gorham
Dodge, J. B. (VA)

Grenier Field
Croy, J. R. (A)

Keene
Batchelder, E. F., Jr. (A)

Laconia
Farrington, J. F. (F)
Kimball, E. W. (A)

Manchester
Castor, A. H. (A)
Chandler, V. H. (VA)
Gleason, R. J. (SM)
Peskoe, I. (A)
Spitz, C. E. (A)

Milford
Romney, E. (A)

NEW JERSEY

Allendale
Kazda, L. F. (A)
Robbins, R. L. (SM)

Arlington
Savadelis, I. C. (A)

Asbury Park
Chappell, J. F. (A)
Colloff, I. (A)
Ercolino, M. D. (A)
Goldfus, S. M. (A)
Grasser, L. G. (A)
Hammond, A. L. (A)
Hecht, B. (M)
Hersh, S. H. (A)
Jacobs, F. (VA)
Johnson, P. K. (A)
Richard, V. W. (A)
Rose, C. F. P. (SM)
Sarett, M. (A)
Shapiro, G. (A)
Stiber, S. (A)
Swingle, D. M. (A)

Atlantic City
Di Giacinto, L. (A)

Atlantic Highlands
Reinhart, A. G. (A)

Audubon
Baker, H. F. (A)
Bennert, W. W. (A)
Fiet, O. (A)
Ruoff, R. (VA)
Smalts, F. W. (VA)
Wolf, L. J. (VA)

Avon-By-The-Sea
Ullmann, M. A. (A)

Barnegat
Schlingloff, G. F. (A)

Bayonne
Boyle, G. G. (A)
Hastings, C. L. (A)
McCauley, C. E. (A)
Rosenthal, S. W. (A)
Schnipper, A. (A)
Toole, L. J. (A)
Zebrowski, J. A. (A)

Beachwood
Clement, B. R. (A)

Belle Mead
Dunn, J. E. (A)

Belleville
Cohen, R. M. (M)
Gray, L. F. (M)
Hoagland, K. A. (A)
Macallister, A. R. (A)
Miller, H. G. (SM)
Sherman, V. W. (SM)
Whittle, R. L. (A)
Yarmack, J. E. (A)

Belmar
Berman, H. (A)
Coles, F. A. (VA)
Deacon, N. E. (A)
Gibbons, D. R. (VA)
Jarema, E. D. (A)
Kass, S. (A)
Lisman, H. (A)
McCorvey, V. A. (A)
Rivers, R. (A)
Ruze, J. (A)
Shuster, E. F. (VA)
Thompson, J. M. (A)
Wagner, H. M. (SM)
Webb, H. D. (M)
Yamins, H. G. (VA)

Bergenfield
Claassen, F. S. (A)

Bloomfield
Affelder, C. (A)
Atwood, H., Jr. (M)
Bachand, G. R. (A)
Bishop, J. B. (SM)
Blake, N. H. (A)
Brubaker, P. M. (A)
Burley, F. E. (VA)
Daubaras, E. J. (M)
DeRosa, L. A. (A)
De Ryder, H. (VA)
Elston, G. F. (M)
Friend, H. H. (SM)
Gleason, C. H. (A)
Gronberg, H. C. (VA)
Haeseler, P. R. (A)
Haninger, G. A. (A)
Hickstein, B. A. (A)
Johnson, W. C. (A)
Kreer, J. G., Jr. (SM)
McNall, J. W. (A)
Mitchell, C. D. (SM)
Moran, W. G. (A)
Mouromtseff, I. E. (SM)
Potter, C. R. (VA)
Quodomine, R. A. (A)
Retherford, R. C. (A)
Rhodes, H. A. (A)
Sloughter, W. J. (M)
Spangenberg, L. F. (M)
Symonds, R. J. (A)
Westlake, P. R. (A)
Wheeler, M. S. (A)
White, R. A. (A)
Widell, E. G. (SM)

Bogota
Hastings, H. A. (A)

Boonton
Anderson, N. J. (A)
Baldwin, J. G., Jr. (A)
Benning, H. H. (SM)
Black, K. C. (SM)
Blackman, H. W. (A)
Borgstrom, H. P. M. (A)
Breiding, E. J. (A)
Cook, L. O. (VA)
Downsbrough, G. A. (A)
Drake, F. H. (SM)
Franks, C. J. (SM)
Hull, L. M. (F)
Leung, Y. L. (A)
Loughlin, W. D. (F)
March, P. S. (VA)
Minter, J. (VA)
Montcalm, S. R. (SM)
Morrison, J. F. (SM)
Nuss, S. L., Jr. (A)
Paine, R. C. (SM)
Redington, J. H. (VA)
Richardson, A. G. (SM)
Van Beuren, J. M. (A)
Zayac, F. R. (A)

Bound Brook
Stair, D. N. (VA)

Bradley Beach
Blackwell, E. L. (A)
Cohen, P. (A)
Kazan, B. (A)
Levy, S. J. (SM)

Bridgeton
Butterfield, W. S. (A)

Caldwell
Carne, G. G. (A)
Eberhard, L. E. (VA)
Gross, H. R. (A)
Gruenberg, E. L. (A)
Hart, H. W. (A)
Hotopp, A. H., Jr. (SM)
McBrair, H. C. (A)
Meixell, O. S. (SM)
Nuner, J. F., Jr. (VA)
Poulson, W. A. (A)
Shepard, R. H. (A)
Willis, F. C. (VA)

Camden
Ackerman, M. J. (VA)
Barnes, L. (A)
Beers, G. L. (SM)
Bencan, W. L. (A)
Brumbaugh, J. M. (SM)

Brunet, M. (SM)
Crosby, D. R. (VA)
Cummings, J. J. (VA)
Daly, G. M. (A)
Dollscheck, C. W. (A)
Eaton, T. T. (A)
Fox, R. H. (A)
Gerber, P. D. (VA)
Ghosh, S. P. (A)
Gunther, C. A. (A)
Hucke, H. M. (VA)
Hunt, C. M. (A)
Jones, L. F. (SM)
King, L. A. (A)
Koch, W. R. (VA)
Korman, N. I. (SM)
Kreuzer, B. (VA)
Lauer, H. (A)
Lesnick, R. (A)
Levenson, D. W. (A)
Lewis, C. M. (A)
Lingo, J. E. (VA)
Maloff, I. G. (F)
Mayrogenis, A. J. (VA)
Miehle, W. (A)
Minneman, M. J. (A)
Orr, R. W. (VA)
Rexon, L. M. (A)
Rosenthal, D. (A)
Ruben, H. (VA)
Sands, W. F. (A)
Smith, T. A. (SM)
Stanko, E. (VA)
Stansbury, M. L. L. (A)
Stott, H. B. (A)
Trainer, M. A. (VA)
Trouant, V. E. (SM)
Vilkomerson, B. S. (A)
Walter, J. C. (SM)
Washburn, E. M. (VA)

Cape May
Bond, M. L. (M)

Carlstadt
Herrmann, P. J. (A)

Cedar Grove
Fortin, R. C. (A)
Goldsmith, T. T., Jr. (VA)

Chatham
Baker, H. W., Jr. (M)
Davis, R. C. (A)
Felch, E. P. (SM)
Hedberg, C. A. (A)
Hensel, M. L. (A)
Hensel, W. G. (VA)
Klesse, W. R. (A)
Peterson, A. C., Jr. (SM)
Powell, A. E. (A)
Rupp, O. R. (A)
Sweeny, C. P. (SM)
Wolfe, J. E. (A)

Clifton
Bentley, A. Y. (A)
Koch, S. J. (A)
Odarenko, T. M. (SM)
Snadyc, A. M. (A)
Vannote, W. M. (A)
Wing, A. K., Jr. (SM)

Collingswood
Albrecht, H. D. (VA)
Barton, L. E. (SM)
Beagles, R. (A)
Boerner, T. J. (VA)
Born, L. W. (A)
Brotzman, E. S. (M)
Clark, E. L. (VA)
Friend, A. W. (SM)
Gluyas, T. M., Jr. (SM)
Lawrence, W. L. (VA)
Lindner, H. G. (A)
Mac Sorley, O. L. (A)
Matson, L. E., Jr. (A)
Merkle, W. W. (A)
Ohler, A. E. (A)
Palmquist, J. F. (SM)
Plass, H. J. (A)
Potter, E. H. (VA)
Pulley, A. A. (VA)
Rhea, H. E. (A)
Roe, J. H. (A)
Selby, E. O. (VA)
Smith, L. C. (SM)
Solomon, S. (A)
Stupp, R. W. (VA)
Swanson, M. A. (A)
Turner, A. H. (VA)
Woodward, B. J. (VA)

Cranbury
Applegate, H. E. (A)
Morgan, J. M. (M)
Shankweiler, R. G. (VA)
Smith, J. P. (SM)

Cranford
Buzalski, T. J. (VA)
Cornell, J. I. (SM)
Dlouhy, F. W. (A)
Fulmer, J. W. (VA)
Pulley, L. A. (VA)

Deal
Albersheim, W. J. (A)
Cutler, C. C. (A)
Dale, G. V. (VA)
Hunt, L. E. (SM)
Kerwien, A. E. (SM)
Schelleng, J. C. (F)
Young, L. G. (VA)

Denville
Backer, L. A. (VA)
Clark, M. E. (A)
Eells, M. M. (SM)
Peterman, W. G. (VA)

Dover
Benson, R. K. (A)

Dumont
De Graw, I. H., Jr. (A)
Jarvis, J. (A)

East Orange
Akers, D. C. (A)
Bradford, D. C. (A)
Brigham, C. E. (SM)
Britnell, P. R. (A)
Bruck, G. G. (SM)
Cherry, S. J. (A)
Clark, O. P. (A)
Crump, E. E. (A)
Deaton, C. H. (A)
Eber, M. (A)
Evans, P. H. (F)
Feindel, A. (M)
Frink, F. W. (VA)
Gawler, H. C. (SM)
Grandmont, P. E. (M)
Gray, F. (A)
Hayman, W. H. (A)
Headley, C. B. (A)
Hiller, H. E. (SM)
Hoffman, W. R. (VA)
Holmboe, L. W. (A)
Kline, J. (M)
Knochel, W. J. (VA)
Koch, D. G. (A)
Laube, O. T. (VA)
Leef, G. R. (A)
Lewis, R. F. (VA)
Libby, L. L. (A)
Lorber, R. P. (A)
Macalpine, W. W. (SM)
Mehrbach, E. (M)
Miller, G. A. (VA)
Miller, H. P., Jr. (SM)
Miller, V. F. (A)
Mitchell, J. K. (A)
Morrow, H. W. (A)
Mulligan, J. H., Jr. (M)
Nascenzi, F. L. (A)
Nordlin, H. G. (A)
Oszy, A. J. (A)
Peet, E. C. (M)
Sadowsky, J. M. (VA)
Schaeffer, M. J. (A)
Schmidt, W. C. (A)
Scullin, C. H. (A)
Shackelford, C. L. (A)
Short, W. P. (SM)
Spencer, M. C. (VA)
Spies, D. (A)
Whittemore, J. D., Jr. (A)

Eatontown
Bady, I. (A)
Berg, S. (M)
Bernard, J. L., Jr. (VA)
Biltz, F. J. (A)
Butler, H. (M)
Di Perry, J. (A)
Eannarino, J. M. (A)
Giacoletto, L. J. (M)
Haddock, J. W. (A)
Hindin, A. (A)
Skrypski, E. J. (A)
Zurcher, L. A. (A)

Edgewater
Fleming, J. W. (A)

Elberon
Anderson, F. B. (SM)
Betts, P. H. (SM)
Decker, F. W. (A)
Emurian, A. D. (M)
Goodall, W. M. (SM)
Schafer, J. P. (SM)
Schlaack, N. F. (SM)
Zeitz, A. (A)

Elizabeth
Barber, W. H. (A)
Brick, F. R. (SM)
Brook, J. E. (A)
Cohen, H. (A)
Cohen, S. (SM)
Finney, R. (A)
Harkins, P. B. (VA)
Horning, L. P., Jr. (A)
Kahant, C. G. (A)
Lee, P. H. (A)
Singer, C. H. (VA)
Turnbull, H. A., Jr. (A)
Walsh, L. (VA)
Wilner, J. T. (VA)

Englewood
Lieben, S. B. (M)
Miller, E. S. G. (A)
Miller, S. G. (VA)
Miller, W. F. (A)
Morris, R. M. (A)
Saliba, G. J. (SM)
Savory, W. A. (A)

Erlton
Masters, R. W. (A)
More, C. C. (VA)
Pratt, D. (VA)

Essex Fells
Wooldridge, A. C. (VA)

Fair Haven
Berg, R. A. (M)
Hessel, J. (VA)
Priebe, F. K. (M)
Sharpless, W. M. (SM)

Fair Lawn
Hill, E. N. (VA)
Hylkema, C. G. (A)
McMullen, F. C. (A)
Petry, C. B. (A)

Fairview
Meisenheimer, R. L. (A)
Stephenson, J. O. (A)

Fanwood
Kemp, T. H. (A)

Fort Lee
Davies, R. J. (A)
Smith, K. B. (VA)

Fort Monmouth
Davis, R. (A)
Greenbaum, W. H. (A)
Harrison, C. W., Jr. (M)
Jensen, L. R. (A)
McFall, C. H., Jr. (A)
Samuelson, C. D. (A)

Freehold
Drake, W. W., Jr. (A)
Mackey, C. L. (A)

Garfield
Di Stadio, D. (A)
Pastor, J., Jr. (A)

Gillette
Dietze, E. (VA)
Rystedt, T. (M)

Glassboro
Snyder, R. L. (VA)

Glen Ridge
Bauer, W. M. (M)
Dart, H. F. (SM)
Hall, R. E. (VA)
Hoffman, R. B. (SM)
Jeter, G. G. (A)
Johnson, L. E. (A)
Laning, W. A. (M)
Lester, B. R. (A)
Olsen, E. U. (VA)
Reveal, P. A. (A)
Stanton, S. W. (VA)
Terry, C. B. (A)
Walz, R. F. (SM)

Glen Rock
Beard, C. E. (VA)
Clark, L. E. (VA)
Hartley, J. M. (A)

Green Village
Peery, W. E. (VA)

Guttenberg
Pramshefer, T. W. (VA)

Hackensack
Leighton, H. W. (A)
Morris, C. M. (M)
Siganowick, J. (A)
Zeliff, R. H. (A)

Haddonfield
Ayres, J. J. (M)
Bohlke, W. H. (VA)
Brown, H. W., Jr. (A)
Chittick, K. A. (A)
Cole, D. D. (SM)
Coleman, J. B. (SM)
Conron, W. H. (VA)
Cunningham, O. B. (SM)
Curtiss, A. N. (SM)
Dyson, H. R. (VA)
Gerry, E. F. (A)
Harris, W. A. (A)
Hoffman, W. H. (VA)
Hubbard, B. L. (VA)
Johnson, E. O. (VA)
Joyner, A. A. (VA)
Leigh, J. S. (A)
Love, J. E. (VA)
McGaughey, P. C. (VA)
Millspaugh, F. W. (A)
Parker, J. R. (A)
Peterson, R. A. (A)
Reeber, H. E. (VA)
Renhard, J. A. (VA)
Schrader, H. J. (SM)
Starner, C. J. (A)
Sutherland, E. F. (A)
Terrell, J. A. (VA)
Thomas, H. E. (VA)
Varnum, W. B. (A)
Welsh, R. R. (A)
Welsher, C. E. (VA)
Wheeler, B. F. (M)

Haddon Heights
Baracket, A. J. (A)
Bollinger, W. P. (A)
Meyer, J. V. (A)
Osburn, C. M. (A)
Smith, J. C. (A)
Stern, J. L. (A)
Stone, F. B. (VA)
Washabaugh, D. G. (A)
Wightman, P. E. (A)
Wolf, L. (A)

Hamilton Square
Reed, R. D. (A)

Harrington Park
Amend, A., Jr. (VA)

Harrison
Burnap, R. S. (VA)
Cimorelli, J. T. (SM)
Dunn, R. F. (A)
Henry, T. J. (SM)
James, W. M. (SM)
Kauzmann, A. P. (SM)
Kelly, R. L. (SM)
Lederer, E. A. (SM)
Mackenzie, N. F. (A)
Perkins, T. B. (M)
Rose, G. M., Jr. (SM)
Shaw, G. R. (SM)

Hasbrouck Heights
Green, N. H. (A)
Weiner, M. J. (VA)

Haworth
Osborn, P. H. (VA)

Highland Park
Aird, A. W. (VA)

Highlands
Rohrle, T. A. (A)

Hillside
Fendrich, L. (A)
Tucker, W. (A)
Wintermute, C. H. (A)

Hoboken
De Lano, R. B., Jr. (A)
Neitzert, C. (A)
Rosenblatt, P. (A)
Stempel, W. M. (VA)
Stockwell, F. C. (SM)
Strain, M. (A)
Thurston, E. G. (A)

Hohokus
Freezee, W. D. (A)
Lamb, H. A. (A)
Markus, J. (M)

Holmdel
Englund, C. R. (F)

Interlaken
Hunkins, H. R. (VA)

Irvington
Brown, J. (A)
Budenkaye, A. C. (A)
Dorfman, J. (A)
Jordan, C. J. (A)
Levine, M. E. (M)
Mommo, E. J. (VA)
Piecewicz, C. T. (A)
Strahlman, R. H. (A)
Wilewski, H. M. (A)

Jersey City
Balter, L. M. (M)
Barotta, P. J. (A)
Bedoian, B. (A)
Dabrowski, H. L. (A)
Genser, A. W. (A)
Hershfield, S. (M)
Neher, H. T. (A)
Potocki, J. A. (A)
Ringer, R. L., Jr. (M)
Smith, W. M. (VA)

Kearny
Craig, J. F. (A)
Hamilton, G. E. (A)
Mazzola, J. R. (A)

Keyport
Bastian, C. W. (A)

Lake Hiawatha
Bremer, H. A. (VA)
Grumich, J. (VA)

Lakewood
Bartolf, H. P. (A)

Laurence Harbor
Updike, W. E. (A)

Lawrenceville
Fernsler, G. L. (SM)
Kehn, H. (A)
Wright, O. (VA)

Leonia
Biosca, L. F. (VA)
Colman, L. (A)
Hogan, A. S. (A)
Sargeant, C. E. (VA)

Linden
Gspann, C. J. (A)
Riley, G. B. (A)

Little Falls
Budelman, F. T. (A)
Talamini, A. J. (A)
Van Velsor, C. (A)

Little Ferry
Cooke, C. G. (VA)

Little Silver
Freeland, R. R. (A)
Lowry, L. R. (VA)
Perley, A. L. (A)
Poteet, D. P. (VA)

Livingston
Bareiss, M. (SM)
Laforge, L. H., Jr. (SM)
Ports, E. G. (SM)
Wright, G. S. (A)

Lodi
Hagmann, N. (VA)

Long Branch
Albright, A. R. G. (M)
Brooks, P. J. (A)
Chernow, M. B. (M)
Clark, W. R. (M)
Davis, H. (A)
Davis, H. (A)
De Vore, C. (A)
Fox, J. (A)
Gieringer, C. K. (VA)
Gould, W. B., III (A)
Groves, W. E. (VA)
Harris, H. (VA)
Hines, W. S. (A)
Holt, G. A. (A)
Inslerman, H. E. (VA)
Ireland, C. J. (A)
Kravetz, J. (A)
Levine, S. (A)
Malkin, S. (VA)
Mangiameli, V. S. (A)
Marks, W. S., Jr. (SM)
Marsano, R. W. S. (A)
Morse, M. S. (A)
Penther, C. J. (SM)
Schmeling, A. M. (A)
Sheaffer, C. F. (VA)
Waite, A. H., Jr. (A)
Wilbur, W. E. (A)
Williams, J. A. (A)
Wolfskill, J. R. (A)
Zahl, H. A. (A)

Lyndhurst
Allcock, E. (A)
Berg, L. W. (A)
Friberg, V. (A)
Munn, A. J. (A)
Parry, F. M. (A)
Potts, E. B. (A)
Schneider, A. E. (M)

Madison
Barney, H. L. (M)
Bonanno, J. L. (VA)
Fisher, H. A. (A)
Howard, E. J. (SM)
Hussey, L. W. (A)
Phelps, W. A. (VA)
Phillips, W. E., Jr. (M)
Roetken, A. A. (SM)
Ruckelshaus, J. G. (SM)
Smith, J. W. (SM)
Stucky, J. B. (VA)

Manasquan
Brooks, H. B. (A)

Maplewood
Bosshart, R. F. (A)
Corderman, R. C. (SM)
Cunningham, F. W. (SM)
Currier, S. E. (M)
Hazeltine, A. (F)
Hogencamp, H. C. (SM)
Humphrey, H. C. (VA)
Imhoff, R. H. (A)
Milnor, J. W. (SM)
Small, F. R. (A)
Vance, H. C. (SM)
Wolke, R. K. (A)
Youngstrom, N. C. (VA)

Matawan
Leach, H. B. (VA)

Maywood
Fichtl, R. R. (A)
Koechel, W. P. (VA)
Phelan, T. H. (SM)
Seibert, J. L. (VA)
Warsher, A. (M)

Medford
Anderson, P. A. (SM)

Merchantville
Brown, C. M. (A)
Dye, R. E. (A)
Eiselein, J. E. (SM)
Haeseler, L. W. (A)
Holtz, R. F. (A)
Kentner, C. D. (VA)
McKinney, R. S. (VA)
Morrison, H. L. (A)
Nevitt, H. J. B. (A)
Newman, R. J. (A)
Oman, N. J. (VA)
Pan, W. Y. (A)
Paschon, H. E. (VA)
Patterson, E. B. (SM)
Petry, G. F. (VA)
Sanborn, J. W. (VA)
Story, T. H. (A)
Thompson, L. E. (SM)
Young, J. E. (VA)

Metuchen
Schiffmayer, G. F. (M)

Millburn
Freeman, R. H. (A)
Schafer, E. W. (SM)

Millington
Reitz, L. P., Jr. (A)

Monmouth Beach
West, B. (A)

Montclair
Baker, C. I. (SM)
Beckman, C. (A)
Charton, P. (A)
Fulmer, N. C. (A)
Gage, W. M. (A)
Gerner, A. J., Jr. (A)
Kauffman, C. W. (A)
Keefe, O. A. (A)
Lane, F. A. (VA)
Lundstedt, C. V. (VA)
Muller, C. R. (A)
Okress, E. C. (SM)
Ostlund, E. M. (SM)
Smith, E. L. (VA)
Sprague, V. G. (VA)
Wheeler, C. M. (SM)

Montvale
Gregory, G. S. (A)

Moorestown
Ballentine, E. C. (SM)
Gillespie, H. C. (A)
Poch, W. J. (VA)
Rettenmeyer, F. X. (F)
Schmit, D. F. (SM)
Tesch, W. L. (SM)

Morganville
Lavoie, S. D. (A)
Simpson, A. D. (A)

Morris Plains
Goss, F. A., Jr. (A)
Julian, R. S. (A)
Klyce, B. (A)
Petrich, L. G. (A)

Morristown
Bell, W. L. (A)
Cook, J. H. (VA)
Currier, M. G. (M)
Cushing, P. (A)
Jacobs, O. B. (A)
Leoser, T. S. (SM)
Mathewson, E. P., Jr. (A)
Miessner, B. F. (F)
Morrison, H. (SM)
Strasser, A. (A)

Mountain Lakes
Black, W. L. (SM)
Flannagan, C. (SM)
Ford, G. T. (A)
Houck, H. W. (SM)
King, P. B., Jr. (VA)
Krist, H. K. (SM)
Nordstrom, B. H. (VA)
Osterland, E. H. (VA)
Parkes, A. W., Jr. (VA)
Tyzzer, H. J. (SM)
Webster, F. D. (SM)

Mountain View
Dilatush, E. (A)

Mount Ephraim
Brown, E. M. (A)

Mount Tabor
Hicken, J. (A)
Ruggles, D. M. (M)

Mullica Hill
Douglass, W. A. (VA)

Murray Hill
Anderson, A. B. (A)
Bennett, W. R. (SM)
Boghosian, W. H. (M)
Bomberger, D. C. (VA)
Bond, W. L. (SM)
Bostwick, L. G. (VA)
Cousins, V. M. (VA)
Dunlap, K. S. (A)
Elliott, S. J. (VA)
Fagen, M. D. (M)
Fair, I. E. (VA)
Hartley, R. V. L. (F)
Herrera, J. C. (A)
Holi, F. (A)
Kirkpatrick, W. E. (VA)
Koerner, L. F. (VA)
Lakatos, E. (VA)
Manley, J. M. (A)
McDermott, S. J. (M)
Meacham, L. A. (SM)
Mead, S. P. (A)
Messerschmidt, H. L. (A)
Peterson, L. C. (VA)
Sykes, R. A. (SM)
Wade, N. G. (A)
Warner, A. W., Jr. (M)
Willard, G. W. (VA)

Neptune
Armstrong, R. W. (VA)
Evers, J. T. (VA)
Hurford, W. L. (VA)
Stodola, E. K. (SM)
Wiejek, A. J. (A)

Neptune City
Huber, W. A. (A)
Schiff, W. J. (A)

Neshanic
Kuthe, H. K. (VA)

Netcong
Reichard, W. C. (VA)

Newark
Balashek, S. (A)
Biskner, L. J. (SM)
Bremer, F. V. (A)
Brettell, G. A., Jr. (A)
Cohen, C. L. (A)
Coon, C. E. (VA)
Cunniff, T. W. (A)
Denney, J. M. (A)
Dolinko, L. (A)
Dougherty, R. G. (A)
Edwards, C. M. (M)
Engel, J. S. (A)
Everett, L., Jr. (SM)
Fishman, S. (SM)
Friedman, E. D. (M)
Girard, E. J. (SM)
Goodwin, W. N., Jr. (SM)
Grill, W. (A)
Halgren, J. H. (A)
Hector, L. G. (SM)
Hooven, M. D. (VA)
Jones, A. F. (A)
Klein, M. (A)
Koch, J. S. (A)
Koppelon, R. (A)
Lamb, F. X. (VA)
Lawrence, N. S. (A)
Lee, N. W. (A)
Lewis, G. H. (SM)
Littell, J. G. (A)
Markow, E. W. (A)
McKechnie, J. S. (SM)
Meier, W. L. (VA)
Miles, R. C. (A)
Miller, E. G., Jr. (M)
Miller, J. H. (SM)
Milne, D. D. (A)
Morelock, O. J. (VA)
Muller, F. A. (A)
Murphy, G. G. (A)
Myers, H. W. (A)
Panter, P. F. (A)
Ranger, R. H. (F)
Reiner, L. (A)
Royden, G. T. (F)
Schenck, L. (A)
Shaw, C. C. (A)
Skellett, A. M. (M)
Smith, A. A. (A)
Smith, W. T. (A)
Steinhoff, R. (A)
Tuck, M. (A)
Tuckerman, L. P. (SM)
Tyrrell, L. L. (A)
Wallenstein, J. P. (A)
Warriner, B. (M)
Watts, J. J. (A)
Wendell, E. N. (SM)
Woo, L. N. (A)
Yesenski, J. A. (A)

New Brunswick
Brown, J. H. (A)
Czepyha, F. A. J. (A)
Fich, S. (A)
Potter, J. L. (SM)
Sosebee, F. E. (VA)
Wentink, T., Jr. (A)

Newfield
Sweetman, C. E. (A)

New Milford
Schwartz, H. C. (A)

North Arlington
Chipman, L. D. (A)
Cox, J. W. (A)
Fischer, L. O. (VA)
Gewirtz, H. (A)
Peters, R. A. (A)

North Hackensack
Hammerich, H. A. (A)

North Plainfield
Deeley, P. M. (SM)
Snyder, C. L. (A)
Warren, C. W. (A)

Norwood
Vieth, W. G. (A)

Nutley
Barlow, W. A. (A)
Bondy, J. O. (A)
Briggs, D. K. (A)
Clark, T. H. (SM)
De Vany, B. V. (A)
Hannell, F. D. (A)
Legrand, J. S. (VA)
Lundburg, F. J. (A)
Marchese, T. J. (A)
Marsh, C. O., Jr. (A)
Önder, K. (SM)
Rutherford, R. E. (A)
Shapiro, O. (A)
Smith, N. R. (SM)
Van Duyne, J. P. (A)
Vanek, L. J. (VA)

Oaklyn
Beleskas, S. M. (A)
Houghton, R. W. (A)
Scheldorf, R. D. (VA)

Ocean Grove
Dowden, G. B. (A)

Oceanport
Schnabolk, H. L. (A)

Oradell
Brackett, H. H. (VA)
Yeutter, C. S. (A)

Orange
Dalman, C. (A)
Drosback, E. A. (A)
Everiss, E. B. (A)
Fogel, C. M. (A)
Jenkins, H. C. (A)
Mac Gregor, R. R. (A)
Rudensey, M. B. (M)
Stacy, J. E. (M)
Suydam, C. H. (M)
Volz, P. E. (A)

Packanack Lake
Algor, M. M. (A)
Knoop, W. A., Jr. (A)
Loudon, C. L. (A)

Palisade
Andrews, E. (A)
Doersam, P. D. (A)
Schnoll, N. (A)

Palisades Park
Albanese, R. (VA)
Jean, R. P. (VA)

Palmyra
Gail, H. R. (A)

Paramus
Deiss, E. W. (A)

Passaic
Butts, H. H. (A)
Capen, H. N. (A)
Christaldi, P. S. (SM)
Faust, W. E. (A)
Glasford, G. M. (A)
Horstmann, A. F., Jr. (A)
Kihn, A. (A)
Kurtz, M. (A)
Lehnus, E. L. (A)
Leonard, D. (A)
Levant, A. A. (A)
Librizzi, P. N. (M)
Maron, M. (A)
Mihalik, J. J. (A)
Owen, R. P. (M)
Pratt, J. W., Jr. (A)
Ruiter, J. H. (M)
Sommermeyer, O. R. (A)
Spooner, L. I. (A)
Tekosky, M. G. (A)
Van Winkle, E. W. (M)
Wickersham, W. H. (A)

Paterson
Butterworth, J. W. (A)
Hannah, W. M. (A)
Lome, J. B. (A)
Lucas, E. F. (A)
Oberle, E. J. (A)
Pagonis, G. G. (A)
Petruska, P. C. (A)
Troise, S. (A)
Zarpaylic, J. (A)

Pemberton
Forman, A. H., Jr. (A)

Pennsauken
Bauer, J. A. (A)
Gihring, H. E. (VA)
Lappin, L. S. (VA)

Penns Grove
Tipton, W. F. (A)

Perth Amboy
Garretson, T. A. (A)

Pittstown
Graham, F. H. (VA)

Plainfield
Case, H. M. (VA)
Cumming, K. N. (SM)
Eggerding, H. B. (A)
Shackell, S. M. (A)
Siegelin, C. O. (VA)

Pompton Plains
Gegenheimer, W. C. (A)

Princeton
Allen, H. C. (VA)
Artzt, M. (VA)
Barry, J. G. (SM)
Bartman, F. L. (M)
Bedford, A. V. (VA)
Bierwirth, R. A. (M)
Blatt, J. M. (A)
Braden, R. A. (VA)
Brown, G. H. (F)
Burnside, D. G. (VA)
Burrill, C. M. (SM)
Bush, R. R. (A)
Carlson, W. L. (VA)
Cohen, M. J. (M)
Creager, F. L. (VA)
Cuccia, C. L. (A)
Dickey, E. T. (SM)
Donal, J. S., Jr. (SM)
Donley, H. L. (VA)
Engstrom, E. W. (F)
Epstein, D. W. (SM)
Epstein, J. (A)
Flory, L. E. (VA)
Frantz, W. J. (A)
Fredendall, G. L. (A)
Hackley, R. A. (A)
Hart, H. C. (VA)
Harvey, R. L. (VA)
Hegbar, H. R. (A)
Herbst, P. J. (SM)
Herold, E. W. (SM)
Hershberger, W. D. (SM)
Holmes, R. S. (SM)
Hoyler, C. N. (SM)
Iams, H. A. (SM)
Johnson, W. C. (SM)
Jolliffe, C. B. (F)
Kell, R. D. (VA)
Kilgore, G. R. (SM)
Landon, V. D. (SM)
Law, R. R. (SM)
Linder, E. G. (A)
Meneley, C. A. (A)
Mesner, M. H. (A)
Mihelyi, M. (A)
Montgomery, D. J. (A)
Morrison, W. C. (A)
Morton, G. A. (VA)
Mueller, C. W. (SM)
Nergaard, L. S. (SM)
Neumann, A. J. (A)
Nicoll, F. H. (SM)
North, D. O. (F)
Olson, H. F. (VA)
Pensak, L. (A)
Peterson, D. W. (A)
Roberts, W. V. B. (F)
Robinson, J. G. (A)
Rose, A. (SM)
Rudnick, P. (A)
Schairer, O. S. (SM)
Shulman, C. I. (A)
Smith, P. T. (VA)
Stinchfield, J. M. (SM)
Stone, R. P. (A)
Sziklai, G. C. (SM)
Tolson, W. A. (SM)
Webb, R. C. (A)
Weimer, P. K. (A)
Wendt, K. R. (VA)
Whalley, W. B. (VA)
Wilkinson, W. C. (M)
Willis, C. H. (A)
Wolff, I. G. (F)
Woodward, O. M., Jr. (A)
Young, C. J. (SM)
Yuan, L. C. L. (SM)
Zworykin, V. K. (F)

Rahway
Graham, R. C. (A)
Robinson, G. D. (A)
Sensenig, W. A. (A)

Ramsey
Muller, F. Sr. (SM)
Tague, W. T. (A)

Red Bank
Baum, E. (A)
Beck, A. C. (VA)
Brandt, R. H. (A)
Bruce, E. (SM)
Bush, J. A. (A)
Cole, R. I. (VA)
Crawford, A. B. (VA)
Davidson, E. D. (A)
Doellner, L. J. (A)
Domidion, W. G., Jr. (A)
Edwards, C. F. (A)
Fox, A. G. (SM)
Gittelman, A. (A)
Green, M. (A)
Hamilton, K. E. (A)
Hammell, R. (A)
Havel, J. M. (A)
Hunt, D. W. (M)
Jaeger, J. E. (A)
Janes, C. W. (SM)
Jansky, K. G. (SM)
Jipp, J. (A)
Kirshner, D. R. (A)
Klenk, L. M. (SM)
Kock, W. E. (SM)
Lewis, W. D. (A)
McRae, J. W. (VA)
Miller, K. W. (A)
Mumford, W. W. (VA)
Ohl, R. S. (SM)
Okun, A. M. (M)
Perkins, O. D. (SM)
Petrillo, S. E. (A)
Rideout, V. C. (M)
Ring, D. H. (VA)
Robertson, S. D. (SM)
Schlegelmilch, R. O. (M)
Seifert, F. F. (M)
Senn, G. F. (A)
Sheftelman, E. H. (A)
Southworth, G. C. (F)
Stephens, H. (A)
Thomas, E. R. (VA)
Tyrell, W. A. (A)
Vansant, F. T. (VA)
Ward, A. J. (A)
White, A. S., Jr. (A)
Winkler, E. H. (A)
Young, H. H. (A)

Ridgefield
Schubert, H. C. (A)

Ridgewood
Armstrong, C. A. (A)
Berry, C. D. (A)
Bondy, H. A., Jr. (VA)
Cahill, W. J. (VA)
De Leon, J. (A)
De Lime, T. L. (A)
Engel, G. C. (A)
Holt, A. C. (SM)
Rezos, G. (VA)
Stier, M. P. (A)

River Edge
Ennis, F. T. (VA)
Hopper, A. L. (A)
Slack, S. J. (A)
Willms, G., Jr. (A)

Roseland
Schoenbaum, J. R. (SM)

Roselle Park
McNicol, D. (F)

Rumson
Blom, B. V. (A)
Brenner, M. M. (A)
Friis, H. T. (F)
King, H. D. (A)
Ward, J. E. (A)

Rutherford
Brett, H. M. (M)
Clark, W. H., Jr. (A)
Crago, P. H. (A)
Dick, R. T. (VA)
Hanley, J. F. (VA)
Happe, W. H., Jr. (A)
Hartmann, W. A., Jr. (A)
Hayes, J. C. (A)
Kline, M. B. (M)
Mahler, A. E. (A)
Scott, G. R. (M)
Simpson, W. F. (VA)

Salem
Morton, R. S. (VA)

Scotch Plains
Bell, J. S. (VA)

Short Hills
Budenbom, H. T. (A)
Curtis, R. C. (VA)
Harrison, A. E. (A)
Heberlein, A. A. (VA)
Prichett, P. P. (A)
Tucker, J. P. (VA)
Vanderbilt, S. (A)
Wright, A. K. (SM)

Shrewsbury
Ross, A. H. (A)

Somerville
Hickman, D. H. (A)

South Amboy
Riker, M. (A)

South Orange
Bayles, J. C. (SM)
Field, W. T. (VA)
Gardner, P. S. (A)
Garmany, W. J., Jr. (A)
Goldsmith, B. M. (A)
Hight, S. C. (SM)
Jervis, E. R. (VA)
Miller, H. J. (SM)
Robinson, A. L. (VA)
Stanwick, C. A. (VA)
Steiger, B. F. (A)
Stoddard, R. N. (A)
Wang, C. C. (A)

South Plainfield
Bailey, W. M. (SM)
Kmosko, J. A. (A)

Springfield
Anderson, L. T. (M)
Knowlton, C. S. (VA)

Spring Lake
Anderson, A. E. (M)
Goldner, J. H. (A)
Gorham, J. E. (A)

Summit
Bode, H. W. (SM)
Boysen, A. P., Jr. (A)
Ellis, B. T., Jr. (A)
Feldman, C. B. (F)
Hartman, C. D. (VA)
Harry, W. R. (VA)
Kircher, R. J. (SM)
Kline, F. S. (VA)
Knoop, W. A. (VA)
Marshall, R. W. (M)
Michon, A. E. (M)
Moeder, W. D. (A)
Orth, R. T. (SM)
Read, G. W. (VA)
Satterthwaite, W. F. (A)
Shepard, F. H., Jr. (A)
Shepherd, W. G. (A)
Smith, D. A. (A)
Snow, W. B. (VA)
Taylor, C. W. (VA)
Waterman, F. N. (SM)
Watts, H. M., Jr. (A)
Whitney, M. E. (SM)
Windhorst, L. H. (A)

Teaneck
Billman, E. F. (A)
Mezger, G. R. (VA)
Sather, O. J. (VA)
Shelby, R. E. (SM)

Tenafly
Copp, W. C. (A)
Eayrs, H. A. (A)
Eller, K. B. (VA)
Fink, D. G. (SM)
Grenier, T. B. (A)
Grierson, C. A. W. (SM)
Hull, R. E. (A)
Paulson, G. A. (A)
Swensen, J. J. (VA)

Teterboro
Rylsky, G. V. (A)
Selvidge, H. (SM)

Trenton
Ballard, R. C. (A)
Harris, F. M. (VA)
Hoenig, A. J. (A)
Wentzel, A. G., Jr. (A)
Wright, D. I. (A)

Tuckerton
Loux, S. (A)

Union
Edwards, J. B. (VA)
Heinz, A. (A)

Union City
Donovan, D. R. (A)
Kane, H. E. (VA)
Ring, C. E. (A)

Upper Montclair
Arnott, R. F. (A)
Atwater, C. K. (A)
Bender, J. H. (A)
Boyajean, J. A., Jr. (A)
Crosby, M. G. (F)
De Long, O. A. (VA)
Du Mont, A. B. (F)
Fernald, O. H. (A)
Godley, P. F. (VA)
Hayes, W. L. (A)
Huffman, C. E. (A)
Hulst, G. D., Jr. (M)
Lempert, I. E. (M)
Roemisch, J. L. (SM)
Rose, F. C. (A)
Sayer, W. H. (A)
Spindler, J. C. (A)
Steadman, A. (A)
Ware, P. (SM)

Ventnor
Walker, A. C. (A)

Verona
Butler, H. R. (VA)
Cameron, E. G. (A)
Dailey, H. J. (A)
George, E. E. (SM)
Griffith, B. G. (VA)
Jacobs, G. W. (A)
Knapp, G. P. (A)
Thompson, W. S. (M)
Tratt, F. H. (SM)

Wanaque
Ryerson, J. D. (A)

Weehauken
Samuelson, W. H. E. (A)

West Allenhurst
Lewis, H. M. (SM)
Roush, G. E. (A)

West Caldwell
Baxter, C. L. (A)
Hampshire, R. A. (VA)
Hazlehurst, E. (VA)
McLeod, K. A. (A)
Myers, R. H. (A)
Schade, O. H. (SM)
Wilde, A. E., Jr. (A)
Williams, S. B. (A)

West Collingswood
Armstrong, C. W. (A)
Berry, H. W. (A)
Epperson, J. B. (SM)
Garrigus, W. E. (A)
Henderson, R. A. (SM)
Jensen, D. W. (A)
Kozanowski, H. N. (VA)
Lev, S. N. (VA)
Perry, S. V. (VA)
Pettengill, G. W. (VA)
Talmage, F. E. (A)

West Englewood
Lanxner, J. M. (A)
Paulsen, J. F. (A)
Whitaker, J. N. (A)
Wilbur, E. C. (VA)
Zuschlag, T. (A)

Westfield
Burns, G. K. (VA)
Dinzl, R. A. (A)
Laube, H. W. (VA)
Massingham, H. J. (A)
Mathes, R. E. (VA)
Peterson, L. J. (M)
Van Tassel, E. K. (SM)

West Long Branch
Deisinger, D. A. (A)

Westmont
Baab, H. E. (A)
Fish, C. A. (A)
Grundmann, G. L. (VA)
Jacobi, T. E. (A)
Taylor, J. P. (VA)
Sinnett, C. M. (A)
Weaber, K. (A)

West New York
Kovarik, H. J. (A)
Thomas, W. E. (VA)

West Norwood
Griffin, A. T. (A)
Lush, W. G. (SM)

West Orange
Bain, J. C. (VA)
Crowley, H. L. (SM)
Edison, T. M. (VA)
Glauber, J. J. (SM)
Kishpaugh, A. W. (SM)
Neill, C. L. (A)
Olesen, H. L. (SM)
Perkins, G. C. (VA)
Reise, H. A. (SM)
Ryan, F. M. (F)
Shangraw, C. C. (SM)
Snow, H. A. (VA)
Somers, R. M. (SM)
Tooker, F. H. (A)
Van Iderstine, A. (A)
Warren, W. H. (M)

Westwood
Daviet, W. C. (A)

Whippany
Baker, G. H. (A)
Coram, R. E. (SM)
De Motte, F. E. (A)
Doherty, W. H. (F)
Hammann, P. L. (A)
Hough, R. R. (A)
Leibing, J. K. (A)
Leighton, J. (M)
Lenigan, T. E. (VA)
Olmstead, N. C. (SM)
Ong, F. C. (VA)
Skene, A. A. (SM)
Smith, P. H. (VA)
Tinus, W. C. (SM)
Younker, E. L. (A)

Wildwood
O'Farrell, J. J., Jr. (A)

Woodbury
Hershey, R. L. (A)

Woodridge
Arcand, W. (M)
Kennedy, J. (VA)
Warner, H. K. (M)

Wyckoff
Menes, H. C. (A)

NEW MEXICO

Albuquerque
Creveling, R. (A)
Crozier, W. D. (VA)
Dodds, L. F. (A)
Hardgrave, W. F. (M)
Johnson, G. S. (A)
Jones, H. L. (VA)
Noon, J. R. (A)
Quan, T. (A)

Roswell
Gessert, E. C., Jr. (A)

Santa Fe
Blake, F. G., Jr. (A)
Colby, R. L., Jr. (A)
Conway, J. (A)
Covert, J. L. (A)
Denby, H. H. (A)
Dike, S. H. (A)
Doll, E. B. (VA)
Hofmann, J. A. (A)
Jensen, K. S. (A)
Miller, D. C. (A)
Palevsky, H. (A)
Silsbee, H. B. (A)
Taschek, R. F. (A)
Wright, O. L. (A)

State College
Brown, H. A. (A)

Tucumcari
Gerdes, F. A. (A)

NEW YORK

Albany
Feiker, G. E., Jr. (M)
Hudson, A. E. (A)
Marin, I. L. (A)
Smith, H. E. (VA)

Alden
Ellison, D. R. (A)

Alfred
Burzycki, M. (A)

Amenia
Bailey, V. G. (A)

Amityville, L.I.
Smith, A. D., Jr. (M)

Ardsley
Conviser, H. (VA)

Armonk
St. Cyr, A. L. (A)

Astoria, L.I.
Gruendel, G. F. (A)
Kane, J. J. (A)
Martoccia, E. (A)
Parant, N. (A)
Wojciechowski, E. T. (A)

Babylon, L.I.
Bleil, F. J. (SM)
Gollhofer, P. J. (A)

Baldwin, L.I.
Andrews, E. G. (A)
Cleland, T. (A)
Hanson, K. W. (A)
Skipper, L. C. (A)
Stroebel, J. C. (SM)
Walker, L. C. (A)
Watlington, F. W. (A)
White, J. A. (A)

Ballston Spa
Rettenmeyer, R. D. (A)

Bay Shore, L.I.
Faltin, J. W. (A)

Bayside, L.I.
Babcock, W. C. (M)
Bowerman, E., Jr. (A)
Bowman, D. F. (A)
Collins, F. A. (A)
Dalton, J. L. (VA)
Dean, C. E. (SM)
Ellefson, B. S. (M)
Ellis, T. H. (A)
Fultz, M. E. (SM)
Gatti, W. (A)
Gray, J. E. (A)
Hinners, F. A. (F)
Holt, H. W. (SM)
Loughlin, B. D. (M)
Lyons, W. (VA)
McKee, L. H. (A)
Moncton, H. S. (A)
Troxler, L. J. (SM)
Tyson, B. F. (VA)
Valentine, R. D. (A)

Beacon
Pullis, F. D. (A)

Belle Harbor, L.I.
Beibin, H. (A)
Dowsley, R. E. (A)
Rhodes, C. E. (A)

Bellerose, L.I.
Sartori, E. F. (A)

Bellmore, L.I.
Glaser, E. M. (VA)
Lundwall, G. F. (A)

Binghamton
Decker, G. A. (VA)
Gilbert, L. H. (VA)
Merchant, J. H. (A)
Pittsley, E. L. (A)
Stantz, L. H. (A)

Brightwaters, L.I.
Garrettson, T. M. (A)
Lang, J. G. (VA)

Bronxville
Ayer, O. G. (VA)
Gordon, T. M., Jr. (A)
Lord, R. (VA)
McCoy, R. D. (A)
Miller, E. (A)
Mumma, H. A., Jr. (A)
Serrell, R. (SM)
Simberkoff, S. W. (A)
Townsend, C. L. (A)

Buffalo
Andriatch, N. D. (A)
Atwood, B. E. (VA)
Bergerson, W. (A)
Blinzler, R. F. (A)
Bruch, R. (VA)
Burbank, J. (VA)
Clark, J. H. (A)
Davis, W. L. (A)
Dybowski, A. J. (VA)
Frazier, R. E. (A)
Frederick, C. L. (M)
Glass, L. M. (A)
Harvey, H. F. (A)
Hoffman, K. B. (M)
Huber, C. W. (VA)
Hultberg, C. A. (SM)
Iddings, H. G., Jr. (A)
Kingsley, R. J. (M)
Leitner, P. R. (A)
Levan, M. T. (A)
Levin, K. L. (A)
Levy, R. S. (A)
Manchester, E. J. (A)
Masque, N. (A)
Nowicki, J. J. (A)
Odien, E. J. (A)
Okonski, C. B. (A)
Robinson, J. E. (A)
Roy, E. H. (A)
Rupert, W. L. (A)
Seeman, W. F. (VA)
Shattuck, H. L. (A)
Silverman, A. J. (A)
Staderman, H. W. (A)
Tittle, H. C. (VA)
Vanacore, T. (VA)
Van Baalen, J. M. (A)
Wagner, R. W. (A)
Waud, E. C. (VA)

Canisteo
Ingalls, C. E. (SM)

Cedarhurst, L.I.
Harris, H., Jr. (A)
Koch, R. F. (A)
Mercier, A. E. (VA)

Central Valley
James, R. T. (VA)

Chappaqua
Cowilich, W. B. (A)
Gilbert, C. M. (A)

College Point, L.I.
Stiepel, G. W. (A)
Wappler, A. C. (A)

Corning
Gumbart, H. E. (A)
Guyer, E. M. (M)
Hocker, J. P. (M)
Phillips, C. J. (A)
Ritter, E. W. (SM)
Shaw, M. R. (M)
Spears, R. W. (A)
Wetmore, W. L. (A)

Cortland
Rust, W. M. (A)

Croton-On-Hudson
James, V. N. (SM)

Cuba
Miller, E. A. (A)

De Witt
Taylor, F. W. (A)
Walker, O. F. (A)

Dobbs Ferry
Barrett, R. C. (A)
Boyle, H. G. (A)
Espersen, G. A. (VA)
Gaylord, W. B. (A)
Trifari, F. R. (A)

Douglaston, L.I.
Anderson, E. C. (SM)
Anderson, W. C. (VA)
Batcher, R. R. (SM)
Geils, J. W. (A)
Hirsch, C. J. (SM)
Long, F. A. (A)
Shanck, R. B. (SM)
Tracy, J. B., Jr. (A)

Dunkirk
Barris, H. A. (A)

East Aurora
Hopkins, J. E. (A)

East Hempstead, L.I.
Cahill, F. C. (SM)
Fragola, C. F. (A)
Heckman, W. E. (A)
Murphy, E. J. (A)
Rhodes, M. L. (A)
Stearns, H. M. (A)

East Islip, L.I.
Thomas, F. G. (A)

East Rockaway, L.I.
Lephakis, A. J. (A)
McKesson, L. J. (VA)

East Williston, L.I.
Brannin, R. S., Jr. (VA)

Eggertsville
Borkowski, C. J. (A)
Forbes, H. C. (SM)
Davison, M. C. (A)

Elbridge
Burke, E. E., Jr. (A)

Elma
Vorie, I. N. (VA)

Elmhurst, L.I.
Allen, A. E. (A)
Auditore, C. J. (A)
Erdman, A. (A)
Hlipala, N. (A)
Moritz, S. I. (A)
Neugebauer, H. W. (A)
Nye, J. H. (M)
Siegmund, E. L. (A)
Stuhler, R. E. (A)

Elmont, L.I.
Miller, G. (A)

Elmsford
Carlisle, R. W. (A)
Chasan, L. (A)
Genz, W. F. (A)
Kranz, F. W. (VA)
Pearson, H. A. (VA)

Fairport
Holmes, L. C. (M)

Farmingdale, L.I.
Howard, E. P. (A)

Far Rockaway, L.I.
Brown, W. (M)
Gallay, H. (VA)
Guttmann, I. (A)
Haynes, N. M. (M)
Shadowitz, A. M. (A)

Fayetteville
Deerhake, F. M. (M)
Mushrush, R. S., Jr. (A)
Thomas, H. P. (M)

Floral Park, L.I.
Eberle, E. E. (A)
Goodwin, V. D. (VA)
Hammerschmidt, A. L. (VA)
Marshall, T. A. (A)
Nixon, G. M. (A)
Parchman, J. B. (M)
Pine, C. C. (A)
Smith, C. S. (A)

Flushing, L.I.
Aull, W., Jr. (SM)
Barber, A. W. (VA)
Battin, D. C. (A)
Chapin, R. S. (A)
Clark, H. L. (A)
Corey, V. B. (A)
Delany, F. J. (A)
Doncese, G. (A)
Falbee, H. W. (A)
Garman, R. L. (A)
Goodman, G. H. (A)
Harrison, C. W. (A)
Harvey, N. L. (A)
Hatfield, L. N. (M)
Haynes, J. M. (A)
Holzinger, T. E. (VA)
Joss, E. T. (VA)
Kanz, W. J. (M)
Kaparoff, P. S. (A)
Lebert, A. W. (VA)
Leskinen, J. I. (A)
Malmberg, P. R. (A)
Mangini, F. A., Jr. (A)
Morse, L. R. (A)
Navas, Y. F. (A)
Nittoli, A. J. (A)
Nittoli, V. A. (A)
O'Neill, G. D. (VA)
Pater, O. C. (A)
Pores, E. B. (A)
Potter, J. T. (A)
Pronovost, W. L. (A)
Ragazzini, L. J. (A)
Russ, B. H. (VA)
Ryan, J. A. (A)
Schiller, J. (A)
Schlegel, R. A. (A)
Schoenfeld, K. (VA)
Sieminski, E. (A)
Silver, B. (A)
Silver, B. (VA)
Smith, R. M. (A)
Snyder, W. W. (A)
Sorensen, E. (A)
Sprigman, A. (A)
Tepper, H. H. (A)
Thropp, C. H. (VA)
Valladares, J. B. (A)
Watson, W. R. (M)
Wolf, H. A. (A)

Forest Hills, L.I.
Burroughs, G. S. (VA)
Busignies, H. G. (F)
Canavaciol, F. E. (SM)
Carlat, B. (A)
Cosmas, A. (A)
Dietz, H. G. (A)
Frankel, S. (SM)
Freeman, E. E. (SM)
Gilman, B. S. (A)
Goldsmith, L. (A)
Goodman, P. D. (A)
Grieg, D. D. (SM)
Karel, G. M. (A)
Kolk, E. (A)
Lehr, P. (A)
Levine, A. M. (A)
Littenberg, F. E. (A)
Mallalieu, F. R. (A)
Massell, E. (A)
Moldawsky, B. W. (A)
Murray, L. H. (A)
Oram, D. K. (VA)
Powers, J. T. (A)
Shmurak, B. (M)
Sokoloff, P. W. (M)
Surber, W. H., Jr. (A)
Weston, S. (M)

Franklinville
Wagner, D. W. (A)

Freeport, L.I.
Atwood, S. (VA)
Barone, S. A. (A)
Dolphy, E. L. (VA)
Eilenberg, C. (A)
Hesse, A. N. (VA)
Wear, J. (A)

Galway
David, W. R. (VA)

Garden City, L.I.
Browder, J. E. (M)
Buttschardt, C. C. (A)
Cooke, W. T. (SM)
Cornes, R. W. (VA)
Dunn, L. J. (SM)
Dyer, J. N. (SM)
Eveland, E. H. (A)
Fitch, W. A. (SM)
Forrest, G. E. (A)
Gemmill, F. Q. (A)
Ginzton, E. L. (A)
Goertz, R. C. (A)
Guiles, C. H. (A)
Harrison, A. E. (SM)
Heins, J. L. (VA)
Hoag, O. (A)
Isbister, E. J. (SM)
Keim, D. Y. (VA)
Lamb, W. X., Jr. (A)
Learned, V. R. (A)
Levinthal, E. C. (A)
Lloyd, P. A. (A)
Luhrs, C. H. (A)
Lynch, A. H. (SM)
Mallett, J. D. (A)
Marston, R. S. (M)
Maury, M. A. (A)
Mellor, W. N. (VA)
Parsons, B. L. (A)
Schock, J. O. (M)
Sensiper, S. (A)
Sherman, F. L. (A)
Sherwood, E. M. (VA)
Somers, B. A. (VA)
Spencer, B. F. (M)
Stotz, C. C. (A)
Thomason, J. F. (M)
Varian, R. H. (A)
Wathen, R. L. (A)
Wattson, H. B. (A)
Webb, R. C. (A)
Webber, H. E. (A)
Wies, G. A. (M)
Wilson, L. B. (M)
Winchell, W. H. (VA)
Woodyard, J. R. (VA)

Glen Cove, L.I.
Shannon, W. W. (A)

Glen Head, L.I.
Sutherland, D. (A)

Gloversville
Horton, M. D. (A)

Goshen
McClean, J. F. (M)
Ring, E. F. (A)

Great Kills, S.I.
Edson, J. O. (SM)

Great Neck, L.I.
Barrow, W. L. (F)
Bradley, G. G. (M)
Crawford, J. D. (SM)
Curtis, L. F. (SM)
Dunlap, O. E., Jr. (SM)
Farr, K. E. (A)
Frost, G. R. (A)
Henry, E. A. (A)
Langley, R. H. (F)
Larick, S. H. (M)
Muller, J. H. (SM)
Onyskin, M. (A)
Pasek, D. M. (A)
Valentine, R. W. (A)
Wheeler, H. A. (F)
Willenbecher, J. F. (SM)
Wisenbaker, T. C. (A)

Hamburg
Fiedler, L. F. (M)
Marks, F. L. (A)

Hankins
Denning, L. S. (A)

Hartsdale
Caldwell, J. H. (A)
Crownover, J. W. (A)
Engelhardt, G. B. (VA)
Stanbery, J. F. (A)

Hastings On Hudson
Fein, B. (A)
Lodge, W. B. (SM)
Miller, D. H. (VA)

Hempstead, L.I.
Allen, W. T. (A)
Andrews, G. B. (A)
Bose, G. L. (A)
Brown, E. M. (A)
Clute, F. H. (A)
Craven, C. L. (VA)
Crist, P. W. (A)
Edwards, R. S. (A)
Evans, C. L. (A)
Farnsworth, N. B. (A)
Feeney, C. J. (A)
Ferrill, T. M., Jr. (SM)
Folland, D. F. (M)
Grant, E. F. (A)
Herr, M. D. (M)
Hesse, H. R. (M)
Jahn, D. M. (A)
Laird, J. A., III (A)
Lester, J. M. (A)
Moreno, T. (A)
Muchmore, R. B. (A)
Norde, L. (A)
Peters, J. L. (VA)
Rothschild, R. F. (A)
Shepherd, J. E. (SM)
Simmons, J. C. (M)
Thiel, W. L. (A)
White, G. E. (A)
Wilkerson, J. R. (A)
Witt, M. K. (A)

Hempstead Gardens, L.I.
Westman, H. P. (SM)

Hicksville, L.I.
Buff, C. (A)
Donnelly, J. T. (A)
Hoffman, H. L. (A)
Kung, L. M. (A)
Steinberg, E. E. (A)
Wessels, D. H. (A)

Hoffman Island, S.I.
Garcia, S. C. (VA)

Hollis, L.I.
Caputo, N. J. (VA)
Ehlert, F. C. (A)
Goldan, T. J. (A)
Squire, F. M. (A)
Velie, A. C. (A)

Horseheads
Bowes, H. J. (A)

Huntington, L.I.
Bache, R. C. (A)
Day, W. B. (A)
Keck, A. (M)
Knight, W. A. (A)
Litchford, G. B. (M)
Lyman, J. (A)

Hyde Park
Fredendall, B. F. (VA)

Inwood
North, J. (A)

Irvington
Duffendack, O. S. (SM)
Runyon, C. R., III (A)
Van Der Harst, J. (A)

Islip, L.I.
Wiener, W. A. (A)

Ithaca
Aldrich, R. W. (A)
Ankrum, P. D. (A)
Beck, G. (A)
Brown, B. B. (A)
Burrows, C. R. (F)
Credle, A. B. (VA)
Farugie, J. R. (A)
Kraushaar, W. L. (A)
McLean, T. (A)
Osborn, R. E. (A)
Seeger, C. L. (A)
Smith, H. G. (VA)
Sudman, I. H. (A)
Truell, R. (SM)
Zimmerman, S. W. (A)

Jackson Heights, L.I.
Bronzo, J. A. (A)
Hickman, C. N. (VA)
Hollabaugh, M. G. (M)
Justman, S. (A)
Kelley, L. A. (VA)
Mac Dowell, J. E. (A)
Mitchell, W. M. (A)
Pickles, S. (VA)
Rehberg, C. F. (A)
Rennenkampf, L. J. (A)
Rodina, J., Jr. (A)
Schneider, E. J. (A)
Schrader, W. A. (VA)
Shank, C. A. (M)
Sherwood, H. R. (A)
Smolen, A. (A)
Snyder, N. (SM)

Jamaica, L.I.
Baldwin, T. W. (A)
Berge, R. G. (M)
Caswell, J. N. (A)
Fleming, C. C. (M)
Henry, A. P. (A)
Hilty, R. M. (A)
Jackson, W. J. (A)
Jeffords, J. M. (A)
Juni, E. (A)
Kipp, L. (A)
Melton, A. (A)
Smith, F. W., Jr. (A)
Sumerlin, W. T. (M)
Tawney, G. L. (SM)
White, F. E., Jr. (VA)
White, J. D., Jr. (VA)

Jamaica Estates, L.I.
Heindel, H. J. (SM)

Jamestown
Turner, P. M. (A)

Johnson City
Coroniti, S. C. (M)
Marshall, B. T. (VA)

Kenmore
Haner, L. P. (A)
Korts, H. G. (VA)
Lamy, R. H. (A)
Noel, L. S. (A)
Riggs, J. H. (A)
Stephenson, H. B. (A)

Kew Gardens, L.I.
Acheson, M. A. (F)
Ander, J. (A)
Brilmayer, E. W. (A)
Chodorow, M. (A)
Corl, J. L. (A)
Davis, C. F. (A)
Dolnick, A. L. (M)
Etter, J. M. (A)
Gable, N. P. (A)
Gehrke, F. (A)
Graham, R. E. (A)
Harris, J. R. (A)
Ishler, H. K. (VA)
Kahal, R. (A)
Kronenberg, M. H. (A)
Palmer, R. N. (SM)
Pennington, E. T. (A)
Ruben, A. S. (VA)
Schottland, F. D. (VA)
Shapiro, D. L. (M)
Susskind, S. E. M. (A)
Wheeler, W. R. (A)
Young, R. A. (A)

Kings Park, L.I.
Young, R. D. (A)

Lake View, L.I.
Clarke, R. L. (A)
Weinstein, M. (A)

Larchmont
Dean, W. N. (A)
French, B. V. K. (SM)
Hyland, L. A. (VA)
Kerby, G. A. (A)
Levy, M. L. (A)
Lurch, E. N. (M)
Plowman, F. R. (A)
Van Der Veen, H. (VA)
Van Lieshout, L. J. A. (SM)
Watson, E. F. (SM)

Laurelton, L.I.
Glaser, M. (A)
Lurie, E. M. (VA)
Schechter, J. (VA)

Leicester
Brough, A. E. (A)

Leroy
Lapp, R. S. (VA)

Lindenhurst, L.I.
Kramer, A. S. (A)

Little Neck, L.I.
Bailey, W. F. (VA)
Blaisdell, H. L. (M)
Bosman, E. H. (A)
Byers, A. C. (A)
Cohen, A. L. (A)
Craib, J. F. (VA)
De Witt, D. (A)
Di Blasi, J. (M)
Di Toro, M. J. (SM)
Dunning, O. M. (SM)
Everett, J. E. (A)
Goodman, R. M. (A)
Hana, T. C. (VA)
Harnett, D. E. (F)
Hinchey, R. L. (A)
Hoisington, D. B. (M)
Kunicky, B. F. (VA)
Larson, G. C. (SM)
Le Vay, T. C. (A)
Loughren, A. V. (F)
Lowman, R. V. (A)
McIlwain, K. (SM)
Mesa, J. O. (SM)
Nurmela, G. E. (A)
Okrent, J. J. (M)
Page, C. E. (A)
Pomerene, J. H. (M)
Rado, J. A. (SM)
Salati, O. M. (A)
Sussman, H. (SM)
Ware, W. H. (A)
Weiler, I. (A)
Wysocki, K. (M)
Zimmer, E. W. (A)

Liverpool
Goetter, W. F. (A)

Long Island City, L.I.
Ansley, A. C. (VA)
Bagno, S. M. (VA)
Balamuth, L. (A)
Borman, E. C. (A)
Brady, W. A. (VA)
Carvin, E. A. (A)
Dusek, J. F. (A)
Easton, A. (A)
Ito, M. (A)
Iversen, R. J. (M)
Kutel, S. S. (A)
Lorant, L. (A)
Martin, L. (M)
Martin, S. J. (A)
Muth, J., Jr. (A)
Nagy, A. W. (VA)
Oldmixon, E. R. (A)
Poehler, H. (A)
Pollack, L. (A)
Schach, A. (A)
Soderquist, W. A. (VA)

Lynbrook, L.I.
Brewer, A. F. (M)
Fedotoff, N. V. (A)
Gittelson, F. (A)
Heitner, A. J. (A)
Isberg, R. A. (A)
Letellier, R. T. (A)
Maresca, J. F. (A)
Mohr, H. F. (A)
Richardson, K. (A)
Tanck, H. (VA)
Teommey, G. H., Jr. (M)

Malverne, L.I.
Gaffney, F. J. (M)
Gibbs, E. D. (A)
Griffiths, C. M. (VA)
Rojas, F. R. (A)
Schlegel, W. R. (A)
Schneider, R. E. (VA)
Solbrig, A. L. (A)
Van Rosenbergh, W. (A)

Mamaroneck
O'Brien, E. J. (SM)
Pelton, R. G. (M)

Manhasset, L.I.
Bowie, R. M. (SM)
Brunn, R. B. J. (VA)
Hodges, A. R. (SM)
Huber, G. H. (SM)
Mountjoy, G. (SM)
Nickel, F., Jr. (VA)
Peck, A. G. (A)
Rich, G. C. (VA)
Schulz, R. F. (A)

Seale, G. A. (A)
Sprague, R. M. (VA)
Srebroff, C. M. (SM)
Wright, J. W. (SM)

Maspeth, L.I.
Bahlay, A. (A)
Biberacher, R. A. (A)
Lauraitis, A. J. (A)
Powell, T. (A)
Tullius, A. B. (A)

Massapequa, L.I.
Baunach, E. L. (VA)
Fallot, G. W. (A)

Mastic Beach, L.I.
Fuelling, P. W. (A)

Merrick, L.I.
Caldwell, J. J., Jr. (SM)
Gould, R. V. (A)
Olson, V. A. (A)

Middletown
Berger, F. (A)
Callender, E. R. (VA)

Middle Village, L.I.
Camp, S. N. (A)

Midland Beach, S.I.
Ellis, R. T., Jr. (A)

Mineola, L.I.
Bisby, J. F. (A)
Fromm, W. E. (M)
Hoglund, R. H. (A)
Jones, B. F., Jr. (VA)
Lebenbaum, M. T. (A)
Lynch, W. A. (A)
Mieher, W. W. (M)
Miller, D. M. (VA)
Petrich, R. O. (A)
Pettit, J. M. (M)
Schmitt, O. H. (SM)
Skifter, H. R. (SM)
Towner, O. W. (SM)
Weid, A. C. (M)

Mitchell Field, L.I.
Boyd, H. L., Jr. (A)

Monroe
Tooker, H. A. (A)
Vollkommer, W. A. (VA)

Mount Kisco
Shea, H. G. (A)

Mount Vernon
Benzing, R. O. (A)
Brownell, H. R. (A)
Campbell, C. H. (M)
Cinelli, M. N. (A)
Crotty, F. W. (A)
Dorschug, H. A. (A)
Dubin, L. (A)
Eastman, P. J. (VA)
Ehret, C. V. (A)
Hendricks, P. S. (VA)
Hineline, H. D. (A)
Lupo, F. J. (A)
Monroe, R. B. (VA)
Moore, A. R., Jr. (A)
Podell, S. (A)
Rocamora, R. L. (A)
Sonkin, D. (SM)
Stone, C. G., Jr. (VA)

Nassau
Merchant, R. (A)
Smith, G. H. (A)

Newburgh
Seimes, M. S. (A)

New Dorp, S.I.
Thing, K. (VA)

New Dorp Beach, S.I.
Gunther, F. A. (SM)

New Hyde Park, L.I.
Barasch, M. V. (A)
Barnes, R. B. (VA)
Blanchard, D. E. (VA)
Dobson, W. T. (A)
McDonald, J. F. (A)
Monfort, R. A. (SM)
Nachemson, P. R. (A)
Neidert, J. H. (A)

New Rochelle
Cipperly, W. L. (A)
Donofrio, C. J. (A)
Goodale, E. D. (VA)
Greibach, E. H. (VA)
Hemming, C. B. (A)
Pray, G. E. (SM)
Prestholdt, O. L. (M)
Sherman, J. B. (VA)
Spitalny, M. (A)

New York City
Abbot, E. (A)
Abramowitz, S. (A)
Abramson, P. (A)
Aceves, J. G. (SM)
Acosta, F. B. (A)
Adams, G. J. (A)
Adams, I. J. (SM)
Adams, J. V., Jr. (A)
Adams, R. E. (VA)
Adkins, J. M. (A)
Adler, L. L. (A)
Affel, H. A. (SM)
Affias, I. M. (A)
Aitkenhead, J., Jr. (A)
Akey, O. M. (A)
Albert, D. (A)
Albin, F. G. (A)
Alexander, L. (VA)
Allen, M. E. (A)
Almquist, M. L. (A)
Alston, L. (A)
Amatneek, K. V. (A)
Ambrosio, B. F. (A)
Amy, E. V. (SM)
Anderson, C. N. (F)
Anderson, E. I. (SM)
Anderson, L. N. (M)
Anderson, R. E. (A)
Andrasko, J. P. (VA)
Antell, S. (A)
Appel, H. W. (SM)
Armstrong, E. H. (F)
Arnson, L. (SM)
Arnson, R. B. (A)
Ashby, A. L. (VA)
Atkin, R. (A)
Babcock, S. M. (VA)
Bach, H. M. (A)
Bailey, A. (F)
Bailey, A. B. (SM)
Bailey, J. T. (A)
Bair, R. S. (SM)
Baker, G. W. (A)
Baldwin, M. W., Jr. (SM)
Baldwin, P. C. (A)
Balsam, S. J. (A)
Bangert, J. T. (A)
Bangs, J. R. (M)
Barco, A. A. (SM)
Barkey, R. (A)
Barkley, W. J. (SM)
Barlow, D. S. (A)
Barton, C. A. (A)
Baruch, S. N. (A)
Batcheller, A. (SM)
Battie, R. G. (A)
Baum, M. W. (A)
Baum, R. F. (A)
Bayer, M. (A)
Beal, R. R. (SM)
Beauchemin, A. K. (A)
Bederman, S. (A)
Bender, W. (A)
Bennett, R. S. (A)
Bereza, A. (A)
Berger, U. S. (A)
Berinsky, M. (A)
Berkley, C. G. (A)
Berkoff, S. (A)
Berman, H. (A)
Bernstein, A. (A)
Bernstein, J. (A)
Bertero, E. P. (A)
Beverage, H. H. (F)
Binns, J. R. (VA)
Black, D. M. (SM)
Blackman, R. B. (A)
Blackstone, H. (A)
Blackwell, O. B. (F)
Blanchard, J. W. (A)
Blitzer, R. (A)
Bocharoff, G. M. (VA)
Bodle, D. W. (A)
Bollman, J. H. (SM)
Bonner, A. L. (A)
Borgelt, W. E. (A)
Borner, R. C. (A)
Bose, J. H. (VA)
Boughtwood, J. E. (M)
Bouie, W. (A)
Bouman, L. F. (A)
Bown, R. (F)
Boyd, L. K. (A)
Bradburd, E. M. (A)
Bradley, J. L. (A)
Braga, F. J. (VA)
Bramhall, F. B. (SM)
Braunfeld, M. T. (A)
Brazee, G. (VA)
Brenner, B. (VA)
Bressler, J. J. (A)
Briggs, L. A. (SM)
Brillouin, L. N. (SM)
Brittain, G. H. (A)
Brociner, V. (A)
Brown, A. C. (A)
Brown, D. S. (VA)
Brown, J. T. L. (VA)
Brown, R. M. (A)
Brown, W. A. R. (A)
Browning, S. D. (VA)
Browning, W. P. (A)
Brubaker, J. W. (A)
Bruce, G. B. (VA)
Brueck, J. O. (A)
Bruggeman, J. T. (A)
Buitenkant, N. (A)
Bullard, W. R. (VA)
Bullington, K. (A)
Burghard, G. E. (SM)
Burkart, J. A. (A)
Burnell, N. (A)
Burt, W. G. (A)
Burton, E. T. (SM)
Busch, W. R. (VA)
Buttner, H. H. (F)
Butts, R. S. (M)
Byrnes, I. F. (SM)
Cahoon, B. B. (A)
Calbick, C. J. (A)
Caldicott, E. G. (A)
Caldwell, O. H. (F)
Callahan, J. L. (SM)
Campbell, M. E. (M)
Campbell, R. D. (VA)
Carbrey, R. L. (M)
Carduner, W. (VA)
Carlebach, W. M. (VA)
Carlin, B. (A)
Carr, G. W. (A)
Carter, E. F. (F)
Casabona, A. M. (A)
Cassell, J. L. (VA)
Castrignano, R. A. (A)
Cater, J. R. (A)
Cesar, E. M. (A)
Chaffee, J. G. (SM)
Chalfin, N. L. (A)
Chamberlain, A. B. (F)
Chemkalis, L. G. (A)
Chender, J. L. (A)
Cheng, K. Y. (A)
Chesnut, R. W. (SM)
Chick, A. J. (VA)
Chien, F. C. (M)
Chinn, H. A. (F)
Chittick, C. (A)
Church, P. K. (A)
Cilin, L. A. (A)
Clark, J. W. (M)
Coggeshall, I. S. (F)
Cohen, A. B. (A)
Cohn, H. (SM)
Colpitts, E. H. (F)
Colvin, J. D. (M)
Condon, R. J. (A)
Connor, G. C. (VA)
Conto, J. (A)
Cooley, A. G. (M)
Coppell, F. K. (A)
Corbett, C. W. (SM)
Corbett, E. L. (VA)
Cordeiro, A. A. (A)
Corwith, H. P. (SM)
Cosgrove, T. (A)
Costa, J. J. (A)
Cowan, F. A. (SM)
Cramer, L. F. (A)
Crews, F. H. (VA)
Cronburg, C. I., Jr. (M)
Custer, C. J. (VA)
Cutting, F. (F)
Cybick, J. J. (A)
Dalrymple, H. C. (A)
Darrell, R. D. (A)
Daugherty, R. H., Jr. (A)
Davidoff, F. (A)
Davis, R. F. (A)
Deakin, G. (VA)
De Hart, R. N. (A)
De Lange, O. E. (A)
Deloraine, E. M. (F)
Del Vecchio, S. C. (A)
Demarest, C. S. (SM)
Den Breems, A. (A)
de Neuf, D. K. (SM)
Denmead, H. R., Jr. (A)
Dennis, F. R. (VA)
Dennison, B. H., Jr. (A)
De Pasquale, R. H. (A)
Deutsch, M. E. (A)
D'Heedene, A. R. (M)
D'Humy, F. E. (SM)
Dickieson, A. C. (SM)
Dickert, J. E. (A)
Dietrich, F. (VA)
Dietzold, R. L. (SM)
Dishal, M. (A)
Divins, B. (A)
Doba, S., Jr. (A)
Doller, S. (A)
Donald, D. D. (SM)
Dong, J. G. (A)
Donovan, W. E. (SM)
Dostal, F. (VA)
Downing, H. L. (VA)
Drazy, E. J. (A)
Dubbs, B. (A)
Dubilier, W. (F)
Ducore, H. (A)
Dudley, H. W. (SM)
Duncan, R. S. (VA)
Dunefsky, M. (A)
Dunlap, J. D. (A)
Dunn, G. (F)
Durkee, A. L. (VA)
Duskis, E. F. (A)
Duttera, W. S. (SM)
Easton, A. (A)
Easton, I. G. (SM)
Eaves, A. J. (SM)
Echtman, L. (A)
Eddy, M. F. (M)
Egert, S. S. (A)
Eglin, J. M. (A)
Ehrlich, C. N. (VA)
Eichel, J. H. (SM)
Elmendorf, C. H. (A)
Elmer, W. D. (A)
Elwell, D. (A)
Espenschied, L. (F)
Evans, H. W. (VA)
Everett, L. C. (SM)
Fabricant, P. (A)
Facey, J. W. (VA)
Fairweather, B. A. (A)
Fallert, R. J. (A)
Farago, J., Jr. (A)
Farel, V. M. (VA)
Farkas, F. S. (M)
Farnsworth, E. P. (A)
Farrand, C. L. (F)
Fash, R. E. (VA)
Fay, C. E. (SM)
Fazio, J. A. (A)
Federing, A. M. (VA)
Feldt, R. (M)
Ferguson, J. G. (SM)
Fergusson, E. S. (A)
Fernandez, M. (M)
Ferrante, F. M. (A)
Ferrell, E. B. (SM)
Fidelman, D. (A)
Filmer, W. L. (VA)
Finch, J. L. (SM)
Findley, P. B. (SM)
Finke, H. A. (M)
Fischer, H. B. (VA)
Fish, P. P. (A)
Fishberg, S. (VA)
Florance, H. C. (M)
Flores, I. (A)
Flynn, J. G., Jr. (A)
Fogel, M. H. (A)
Fouchaux, J. E. (A)
Franklin, L. W. (A)
Freeman, O. S., Jr. (A)
Freed, A. (A)
Freier, J. B. (A)
Frezzolini, D. (VA)
Freundlich, M. M. (SM)
Friebele, E. J. (VA)
Friedler, P. F. (A)
Friis, R. W. (SM)
Fritschi, W. W. (A)
Fromer, J. (A)
Frum, A. (A)
Frutchey, M. P. (A)
Fubini, E. G. (A)
Fulton, O. H. (M)
Furst, R. E. (A)
Gaillard, R. L. (A)
Gams, T. (A)
Gannett, D. K. (SM)
Ganzenhuber, J. H. (A)
Garblik, A. M. (A)
Gassenheimer, W. T. (A)
Gatkin, T. E. (VA)
Gaydos, G. J. (VA)
Gellings, J. G. (A)
Ghirardi, A. A. (SM)
Giese, R. C. (SM)
Giguere, E. F. (A)
Gilbert, J. (A)
Gilbert, J. J. (VA)
Gilman, G. W. (A)
Ginsberg, A. J. (A)
Glass, M. S. (VA)
Gluck, E. V. (A)
Gofenscheffer, M. (A)
Goldberg, S. A. (A)
Golden, G. (A)
Goldmark, P. C. (F)
Goldsmith, A. N. (F)
Goldwater, F. J. (A)
Goodstein, J. (A)
Gossland, J. K. (A)
Gow, F. C. (A)
Graham, R. B. (A)
Graham, R. E. (M)
Granberry, D. S. (A)
Graner, L. P. (SM)
Gray, M. C. (A)
Gray, R. E. (VA)
Green, E. I. (SM)
Green, L., Jr. (A)
Greenberg, S. (A)
Greenstein, P. (VA)
Greenwood, W. R. (A)
Grelck, H. L. (A)
Gribetz, D. (A)
Grimditch, W. H. (SM)
Gross, F. (A)
Grosselfinger, W. H. (SM)
Grossman, A. J. (M)
Grossman, H. (SM)
Grover, H. G. (SM)
Grumet, A. (A)
Grunberg, B. (A)
Guarrera, J. J. (A)
Guild, B. (SM)
Gunther, H. S. (A)
Gunzbourg, P. M. (SM)
Gurevics, D. (A)
Gutshall, R. W. (A)
Guy, R. F. (F)
Halkias, C. J. (A)
Hallborg, H. E. (F)
Halsall, M. (A)
Hamilton, O. W. (A)
Handelman, R. B. (A)
Hankar, R. E. (A)
Hanson, O. B. (F)
Hara, B. (VA)
Hardwick, A. H. (SM)
Hart, R. N. (A)
Hartley, S. H. (A)
Hawkins, J. N. A. (VA)
Hay, H. A. (VA)
Hayden, E. C. (A)
Hayes, K. V. (A)
Hebenstreit, W. B. (A)
Hefele, J. R. (VA)
Hegel, B. (A)
Heising, R. A. (F)
Henney, K. (F)
Herber, J. C. (SM)
Herrmann, F. J. (A)
Hershler, A. (A)
Hertsch, G. J. (A)
Hertzberg, A. (A)
Hey, H. C. (A)
Hickey, J. S., Jr. (A)
Higdon, R. V. (A)
Hill, E. B. (A)
Hillyer, C. (A)
Himmel, H. (A)
Himmel, L. (A)
Hinrichs, J. H. (A)
Hirsh, W. S. (A)
Hittner, C. (A)
Hobbs, R. P. (A)
Hodes, H. S. (A)
Hoenig, W. (A)
Hoffman, R. W. (A)
Hoffman, S. (A)
Hogan, J. V. L. (F)
Holloway, J. (A)
Homewood, C. (A)
Honaman, R. K. (SM)
Honeiser, V. P. (A)
Hopkins, G. C. (M)
Hopkins, W. L. (A)
Horle, L. C. F. (F)
Horvath, A. (M)
Hovgaard, O. M. (SM)
Howell, C. A. (A)
Howell, W. J. (SM)
Hubbard, F. A. (SM)
Huchberger, A. P. (VA)
Hudack, J. M. (SM)
Hughes, H. K. (VA)
Hughes, K. E. (A)
Hum, B. W. (A)
Immen, G. H. (A)
Ingram, S. B. (SM)
Intiso, J. F. (A)
Isele, H. A. (A)
Israel, D. D. (F)
Ittelson, W. H. (A)
Jackman, M. D. (A)
Jacobi, G. T. (A)
James, E. W. (A)
Janiszewski, F. A. (A)
Jansen, J. J. (A)
Jaronski, T. (A)
Javna, S. L. (A)
Jensen, A. G. (F)
Jensen, R. M. (A)
Jewett, F. B. (F)
Johnson, C. M. (A)
Johnson, J. K. (SM)
Johnson, J. B. (SM)
Johnson, L. R. (A)
Johnson, R. M. (A)
Johnson, R. S. (A)
Johnson, W. D. (M)
Jones, W. J. (A)
Jonker, W. E. (A)
Jordan, H. G. (A)
Jorgensen, A. C. (A)
Joseph, J. L. (A)
Just, G. A., Jr. (A)
Kallmann, H. E. (SM)
Kammerer, F. W. (VA)
Kandoian, A. G. (SM)
Kannenberg, W. F. (SM)
Kantrowitz, P. (A)
Kearney, L. E. (A)
Keesey, E. R. (VA)
Keith, C. R. (A)
Keller, A. C. (VA)
Kellogg, D. S. (A)
Kelly, H. P. (A)
Kelly, M. J. (F)
Kelvin, W. (A)
Kendall, B. W. (SM)
Kendall, J. A. (A)
Kersta, L. G. (SM)
Kievit, B. (SM)
Kilian, L. H. (A)
King, A. P. (SM)
King, F. (SM)
King, K. L. (SM)
King, S. (A)

Kinne, C. B. (A)
Kinsburg, B. J. (M)
Kinzer, J. P. (SM)
Kirschner, M. (A)
Klein, M. I. (A)
Klein, R. M. (A)
Kleinkauf, J. D. (A)
Kmiec, B. W. J. (A)
Knipp, A. R. (SM)
Kolding, A. R. (A)
Kolster, F. A. (F)
Korin, S. B. (A)
Kraemer, G. S. (SM)
Krause, C. K. (VA)
Kunc, F. (VA)
Kurrelmeyer, B. (SM)
Kurtz, W. B. (A)
Labin, E. (SM)
Lack, F. R. (F)
Ladner, H. (VA)
Lambert, J. (A)
Lampkin, R. J. (A)
Landecker, L. (A)
Lane, R. F. (VA)
Langdon, G. G. (A)
Lapatine, S. (A)
Laport, E. A. (SM)
Latham, J. C. (A)
Lear, W. P. (SM)
Ledermann, F. (A)
Lee, P. (A)
Leslie, F. (VA)
Levey, A. W. (A)
Levin, R. M. (A)
Levin, S. A. (VA)
Levine, D. (A)
Levy, S. L. (A)
Lewis, G. (A)
Ley, E. W. (A)
Liguori, A. (A)
Lilienthal, J. R. (A)
Limekiller, A. H. (A)
Lindsay, M. H. A. (VA)
Little, W. A. (A)
Llewellyn, F. B. (F)
Locker, M. H. (A)
Long, F. V. (SM)
Long, M. B. (VA)
Loonie, W. P., Jr. (A)
Lopata, H. H. (A)
Lopez, J. B. (A)
Lowry, H. H. (SM)
Loynes, O. H. (VA)
Lozier, J. C. (SM)
Lubell, R. (A)
Lukas, W. (A)
Lun, M. J. (A)
Lund, N. (A)
Lundahl, T. (M)
Lurye, J. R. (A)
MacDonald, W. A. (SM)
Maedel, G. F. (SM)
Magee, W. L. (A)
Maggio, J. B. (SM)
Mahoney, J. J., Jr. (A)
Makinson, G. E. (VA)
Malin, J. J. (A)
Mandel, M. (A)
Manhart, R. C. (A)
Mann, F. J. (M)
Manship, J. F. (A)
Mao, Y. A. (A)
Marchand, N. (M)
Markowitz, J. S. (A)
Marrison, W. A. (SM)
Martin, A. E. (A)
Martin, B. (A)
Martin, D. K. (SM)
Martin, H. B. (SM)
Martinez, C. (A)
Martowicz, C. T. (A)
Marx, E. A. (A)
Marx, F. L. (A)
Mason, W. P. (F)
Massy, F. M. (A)
Mathes, R. C. (SM)
Maurer, K. L. (A)
Mautner, R. S. (M)
Mayer, C. R. (A)
Mayer, E. E. (F)
Mayoral, G. A. (A)
McClintock, R. K. (SM)
McCormick, L. P. (A)
McCoy, J. C. (SM)
Mc Curdy, R. G. (SM)
McCutchen, B. S. (F)
McElrath, G. (SM)
Mc Farland, R. T. (M)
McGuigan, J. H. (A)
McKenzie, A. A. (M)
McLaughlin, C. J. (A)
McMasters, P. A. (A)
McNally, J. O. (SM)
McSweeny, R. (SM)
McWhan, B. (A)
Meiman, I. J. (A)
Mendenhall, H. E. (SM)
Meola, T. D. (A)
Mertz, P. (SM)
Metzger, S. (A)
Meyer, B. C. (A)
Meyerson, A. H. (M)
Mezger, G. (VA)
Milinowski, A. S., Jr. (VA)
Millar, J. Z. (SM)
Miller, D. A. (A)
Miller, E. W. (A)
Miller, H. M. (A)
Miller, R. A. (VA)
Miller, S. C. (SM)
Mills, J. (F)
Milne, G. O. (SM)
Milwitt, W. (A)
Miner, J. T. (A)
Mischler, W. D. (A)
Mitchell, I. A. (VA)
Mitchell, T. H. (SM)
Mohr, M. E. (M)
Mond, L. I. (VA)
Montfort, L. R. (A)
Mooney, V. J. (A)
Morrison, L. W. (VA)
Morrow, G. (A)
Morse, S. P. (A)
Morton, J. A. (VA)
Mraz, W. L. (A)
Mueller, G. E. (A)
Mueller, H. (A)
Mural, F. (VA)
Musselman, H. (A)
Nadir, M. T. (A)
Naidamast, D. (A)
Nebel, C. N. (A)
Neidoff, S. (A)
Nelson, E. L. (F)
Nelson, G. E. (A)
Neuman, G. J. (A)
Neustadt, H. M. (A)
Nevins, I. (A)
Newhouse, R. C. (SM)
Newton, A. (A)
Nicely, R. N. (VA)
Nichols, L. C. (VA)
Nickerson, F. W. (VA)
Nimmcke, F. E. (SM)
Noller, W. E. (A)
Nordahl, J. G. (SM)
Norris, R. O. (A)
Nyquist, H. (A)
O'Brien, R. S. (M)
Oliver, B. M. (A)
Osborne, H. S. (F)
Osherow, S. A. (A)
Osiatinsky, L. (SM)
Ostrolenk, S. (VA)
Oswald, A. A. (F)
Overby, H. (M)
Owen, C. H. (VA)
Pacent, L. G. (F)
Packard, G. N. (M)
Page, E. C. (SM)
Palmer, J. E. (A)
Pannill, C. J. (F)
Paradise, L. P. (A)
Parisier, M. I. (A)
Parker, H. L. (A)
Parker, O. B. (SM)
Parker, R. D. (SM)
Parks, H. F. (A)
Patterson, G. K. (A)
Pease, R. M. (SM)
Pegram, G. B. (VA)
Pelc, T. (A)
Penick, D. B. (VA)
Pentico, G. W. A. (VA)
Peskin, E. (A)
Petersen, R. L. (VA)
Peterson, E. (SM)
Petrides, T. (A)
Petrucelly, V. J. (A)
Phelps, R. B. (A)
Phillips, D. (A)
Phinney, E. D. (SM)
Pierce, J. L. (A)
Pierce, J. R. (VA)
Pike, D. E. (A)
Pineau, N. T., Sr. (A)
Pizor, I. (A)
Pizzuti, F. D. (A)
Platts, G. F. (SM)
Plotkin, M. N. (A)
Polkinghorn, F. A. (F)
Pomeroy, A. F. (SM)
Ponsolle, W. J. (VA)
Pontecorvo, P. J. (A)
Poole, R. E. J. (SM)
Poor, W. E. (VA)
Popkin-Clurman, J. R. (A)
Poppele, J. R. (SM)
Porter, T. R. (A)
Porterfield, C. (A)
Potter, R. K. (F)
Powell, L. H. (VA)
Pratt, H. (F)
Purcell, R. H. (VA)
Purgett, L. J. (SM)
Quarles, D. A. (SM)
Radcliffe, F. E. (A)
Rae, J. R. (A)
Ragazzini, J. R. (A)
Ramsey, W. S. (A)
Randall, E. F. (M)
Ransom, G. B. (M)
Ratner, M. (A)
Rattner, S. (A)
Ray, S. E. (A)
Rea, W. T. (A)
Reade, R. B. (A)
Reedy, P. H. (VA)
Reeves, J. J. (A)
Reichardt, J. P. (A)
Reichle, W. E. (VA)
Reiling, P. A. (VA)
Reimers, B. (A)
Reisman, S. J. (M)
Reiss, L. (A)
Rendell, G. (A)
Reoch, A. E. (F)
Reynolds, G. (A)
Richards, E. W. (A)
Richman, D. (A)
Riddle, E. R. (VA)
Rider, J. F. (VA)
Rieber, F. (SM)
Riley, D. H. (A)
Roberts, G. T. (A)
Roberts, H. W. (A)
Roberts, W. M. (A)
Robin, H. L. (A)
Robinett, L. L., Jr. (A)
Robinson, J. T. (A)
Rocke, A. (A)
Rockwood, G. H. (VA)
Rod, R. L. (A)
Rodriguez, N. D. (A)
Rogan, J. J. (SM)
Rogers, W. (A)
Rollo, W. S. (A)
Roschke, E. M. (A)
Rose, A. F. (SM)
Rose, R. H., II (A)
Rosenberg, P. (A)
Rosenkranz, H. J. (A)
Rosenthal, A. H. (A)
Rosh, E. (A)
Rosin, A. (A)
Ross, G. A. (A)
Rotker, W. (A)
Rumpel, C. H. (VA)
Russell, J. B., Jr. (SM)
Ryder, R. M. (SM)
Sachs, S. I. (A)
Sales, L. (A)
Salzberg, A. (A)
Samuel, A. L. (F)
Sanders, R. G. (A)
Sarnoff, D. (F)
Saslaw, M. R. (M)
Saunders, H. M. (VA)
Scal, R. K. F. (A)
Scarborough, H. B. (A)
Scarr, H. F. (SM)
Schaefer, E. J. (A)
Schaller, J. (A)
Schelkunoff, S. A. (F)
Schenck, A. K. (M)
Schlesinger, K. (A)
Schmied, J. W. (VA)
Schoenfeld, E. H. (SM)
Scholz, C. E. (SM)
Schwartz, E. (A)
Schwartz, H. E., Jr. (A)
Schwartz, H. T. (A)
Schwartz, L. D., Jr. (A)
Schwartz, S. (A)
Schwarz, R. J. (A)
Sears, R. W. (A)
Seeley, S. W. (VA)
Seger, L. (VA)
Segerstrom, C. A. (A)
Seigle, R. K. (A)
Seklemian, R. S. (A)
Seyffer, H. C. (A)
Shackelford, B. E. (F)
Shackleton, S. P. (SM)
Shank, R. J. (VA)
Shapiro, L. C. (SM)
Sharp, W. O. (M)
Shatzkin, J. (A)
Shaw, D. (A)
Sheer, C. (SM)
Sheffield, B. (A)
Shelley, E. F. (A)
Shen, M. Y. (A)
Sheppard, H. S. (M)
Sherbin, L. E. (A)
Sherman, H. (M)
Shongut, R. (A)
Shotliff, L. A. (A)
Shute, E. R. (SM)
Sicuranza, C. A. (A)
Silverman, M. (A)
Simberkoff, J. A. (A)
Simon, E. J. (F)
Simon, W. C. (SM)
Simons, B. H. (A)
Simpson, S. H., Jr. (VA)
Skelley, C. L. (A)
Slade, B. (VA)
Slate, M. W. (A)
Slater, F. R. (VA)
Slater, I. M. (SM)
Small, B. (A)
Smith, G. M. (VA)
Smith, J. E. (VA)
Smith, P. W. (A)
Smith, R. J., Jr. (A)
Smith, S. R. (A)
Solzberg, S. (A)
Somers, F. J. (VA)
Sonnemann, H. (A)
Spellman, W. (A)
Spence, P. W. (M)
Sprague, C. A. (SM)
Sproul, P. T. (VA)
Sprung, J. (A)
Stafford, C. B. (A)
Stahl, P. D. (A)
Stansel, F. R. (SM)
Stansfield, J. Q. (VA)
Starr, A. R. (A)
Starr, E. W. (A)
Staschover, L. (A)
Stavis, G. (A)
Steiny, J. O. (A)
Sterling, H. T. (A)
Stern, M. K. (A)
Stevens, A. M. (F)
Stobbe, J. A. (SM)
Stone, E. W. (F)
Strand, J. (A)
Straube, H. M. (A)
Streeter, E. C., Jr. (A)
Streifus, C. A. (A)
Strieby, M. E. (SM)
Summers, L. L. B. (A)
Swanson, J. W. (SM)
Swedlow, S. (A)
Taeschner, L. (A)
Taffet, M. S. (A)
Talley, T. J. (M)
Taussig, C. W. (VA)
Taylor, C. C. (M)
Taylor, C. H. (F)
Taylor, E. R. (VA)
Taylor, S. G. (M)
Taylor, W. H. (SM)
Tefel, A. (VA)
Thatcher, T. W., Jr. (A)
Thieblemont, A. H. (VA)
Thompson, E. J. (A)
Thompson, R. B. (A)
Thompson, R. G. (VA)
Thorn, H. S. (M)
Thulin, C. W. (A)
Tidd, W. H. (SM)
Tierney, W. L. (SM)
Tingley, G. R. (A)
Toeppen, M. K. (SM)
Totah, E. J. (A)
Traino, C. (A)
Trent, R. L. (M)
Trevor, J. B., Jr. (M)
Trucksess, D. E. (VA)
Tucker, M. H. (A)
Tulloch, M. M. (A)
Turner, A. (VA)
Turner, T. B. (A)
Tuttle, C. W. (A)
Uhrich, W. J. (A)
Valladares, J. A. (A)
Vallarino, A. R. (A)
Van Dissel, G. F. (SM)
Van Dyck, A. F. (F)
Van Horn, R. H. (M)
Van Meter, D. (A)
Vaughan, C. (A)
Veazie, E. A. (VA)
Vehling, R. H. (VA)
Venditto, A. C. (A)
Verton, M. P. (A)
Vlodek, S. F. (A)
Vogeler, R. A. (M)
Volker, J. H. (A)
Von Baudissin, J. (VA)
Von Dohlen, H. W. (VA)
Wald, D. (A)
Walker, D. D. (A)
Walker, R. M. (SM)
Wallace, F. C. (A)
Wallace, J. W. (A)
Wang, S. W. (A)
Wang, T. S. (M)
Warnick, G. H. (A)
Warshafsky, H. (A)
Wassa, G. M. (A)
Wasserman, D. D. (A)
Watson, G. S. (M)
Waxler, B. (VA)
Weaver, A. (A)
Weber, V. J. (A)
Wei, C. C. (A)
Weible, N. R. (VA)
Weichardt, H. H. (M)
Weiland, C. F. (A)
Weinberg, N. L. (A)
Weinberger, J. (F)
Weinstein, F. (A)
Weiss, L. (A)
Weiss, M. (A)
Weller, R. I. (A)
Wenk, H. A. (M)
Wentz, J. F. (SM)
Werner, I. A. (A)
Wertz, H. S. (A)
Whaley, H. R. (A)
Whistler, J. P. (VA)
White, S. D. (M)
White, W. D. (VA)
Whittemore, L. E. (F)
Wilhelm, F. A. (A)
Wilkinson, D. A. (A)
Willett, E. (A)
Willis, F. H. (VA)
Wilmotte, R. M. (F)
Wilson, I. G. (SM)
Wilson, J. R. (SM)
Winick, M. (A)
Winter, H. F. (A)
Wintringham, W. T. (SM)
Wise, R. J. (SM)
Wise, R. M. (F)
Wise, W. H. (SM)
Wolfson, H. (A)
Wollman, E. (A)
Wood, I. E. (A)
Wood, R. A. (A)
Woodworth, F. B. (SM)
Worthen, G. B. (A)
Wortman, L. A. (A)
Wright, S. B. (SM)
Wu, I. L. (A)
Yamasaki, A. A. (A)
Yeh, L. P. (A)
Young, C. H. (SM)
Young, J. W. (VA)
Young, N. H., Jr. (SM)
Young, W. R., Jr. (A)
Zeamans, H. R. (VA)
Zvorist, H. (A)
Zwick, G. (A)

Brooklyn

Abrams, J. N. (A)
Ackerlind, E. (VA)
Agresti, F. (A)
Ahrens, G. C. (A)
Anton, N. G. (SM)
Auerbacher, W. F. (A)
Avery, R. D. (SM)
Bader, A. (A)
Bailey, S. J. (A)
Barreto, J. (A)
Baum, S. H. (VA)
Becken, E. D. (VA)
Beckhardt, T. G. (A)
Bellare, D. (A)
Bencivenga, P. (A)
Bennett, M. L. (A)
Berger, A. L. (A)
Bernstein, C. (A)
Bezer, L. H. (A)
Borst, J. M. (VA)
Bower, J., Jr. (VA)
Bramwell, F. (A)
Broman, H. F. (A)
Brown, A. L. (A)
Brown, A. S. (VA)
Byron, M. D. (A)
Cahan, L. C. (M)
Carle, P. V. (A)
Carlen, R. D. (A)
Chasnov, B. (A)
Christopher, E. J. (A)
Cincotta, J. A. (A)
Climent, L. J. (A)
Cline, D. E. (A)
Cohen, G. (A)
Conroe, A. H. (A)
Cornfeld, N. J. (A)
Craige, T. L. (A)
Dagavarian, H. O. (A)
D'Agostino, V. F. (VA)
Danziger, A. (A)
Davis, S. (A)
Day, G. (M)
De Blasio, C. G. (A)
De Bruyn, H. F. (A)
Dettman, M. C. (A)
Dieli, F. J. (A)
Di Fusco, F. J. (A)
Di Vito, F. (A)
Dooner, J. L. (A)
Dropkin, H. (A)
Duke, H. (A)
Ecklund, E. E. (A)
Eichwald, B. (A)
Epstein, M. M. (A)
Ettenberg, M. (A)
Ewing, H. O. (A)
Fenn, W. H. (A)
French, H. A. (A)
Friedman, H. (A)
Gabrielsen, F. T. (A)
Garik, S. (A)
Garoff, K. (A)
Gillespie, C. N. (A)
Glassner, M. (A)
Glenn, A. B. (A)
Goldberg, H. S. (A)
Goldfein, S. F. (A)
Goodman, S. (A)
Gorman, W. F. (A)
Goronin, A. (A)
Gottfried, A. H. (A)
Graef, R. L. (VA)
Green, M. (A)
Gregg, P. E. (A)
Grossman, M. (A)
Guenther, P. F. (A)
Hachemeister, C. A. (A)
Halpern, L. (A)
Hamilton, J. R. (A)
Harris, L. (A)
Heller, S. S. (A)

Hembrooke, E. F., Jr. (VA)
Hertzler, E. A. (M)
Hopkins, E. J. (VA)
Jacobs, C. F. (A)
Jazwa, J. J. (A)
Jorysz, A. (VA)
Jurek, W. M. (A)
Kahgan, J. J. (A)
Kahn, F. J. (M)
Kane, I. M. (A)
Kaplan, M. (A)
Kaplowitz, M. (A)
Kappelmann, G. E. (A)
Karmin, I. (A)
Katzoff, P. (A)
Kaye, H. (A)
Kensinger, J. C. (VA)
King, R. E. (A)
Kirdahy, E. (VA)
Kirishjian, H. H. (A)
Klepper, A. (A)
Klibaner, B. (A)
Kodera, C. F. (A)
Kritz, J. (A)
Kroessler, A. W. (A)
Kurtz, J. A. (VA)
Lake, R. E. (M)
Last, E. (A)
Lebowitz, L. L. (A)
Lebowitz, R. A. (A)
Lee, M. (A)
Levi, S. (VA)
Levine, D. J. (A)
Levine, H. (VA)
Levine, S. (A)
Levitsky, J. (A)
Levy, L. (VA)
Likel, H. C. (VA)
Little, E. F. (A)
Lo Giudice, T. F. (A)
Love, A. L., III (A)
Lubin, A. (A)
Lucas, G. (A)
Lynch, J. A. (A)
Mac Lean, W. R. (A)
Madey, R. (A)
Margosian, J. W. (A)
Marino, J. L. (M)
Marriott, R. H. (F)
Marshall, S. L. (A)
Masciana, A. (A)
McGonigle, W. J., Sr. (M)
Miller, M. (A)
Moore, J. B. (SM)
Moore, W. C. (A)
Morgen, M. (A)
Morton, A. R. (SM)
Moses, A. J. (A)
Moskowitz, S. (M)
Mostofsky, D. (A)
Mucher, G. J. (VA)
Muniz, R. (M)
Munro, G. M. (A)
Myers, C. J. (A)
Nadel, A. (A)
Nechemias, M. (A)
Nicolosi, J. (A)
Odessey, P. H. (A)
Offner, A. (A)
Oravetz, A. S. (A)
Osbahr, B. F. (A)
Painting, J. A. (A)
Papernow, L. N. (A)
Parsegian, V. L. (A)
Paul, I. (A)
Pelner, N. (A)
Platzer, H. L. (A)
Plotkin, M. (A)
Pochmerski, D. (A)
Popp, F. G. (M)
Rabinowitz, M. (A)
Rebold, J. H. (A)
Restaino, J. J. (A)
Rich, E. M. (A)
Rivman, L. H. (A)
Romano, F. J. (A)
Roselli, D. J. (A)
Rosenbaum, A. H. (VA)
Rosenberg, J. D. (A)
Rosenberg, L. (A)
Rothstein, M. (A)
Rowe, I. (A)
Rubenson, J. G. (A)
Rubenstein, A. M. (A)
Rubin, A. (A)
Ruda, A. A. (A)
Rusinow, K. (A)
Sabin, A. T. (A)
Sachs, A. (A)
Safir, R. (A)
Salzman, D. (A)
Schiffman, S. (VA)
Schumacker, A. L. (VA)
Seewald, E. J. (A)
Senauke, A. (SM)
Sherken, J. I. (A)
Silver, M. (A)
Sinder, A. (A)
Skrobisch, A. (A)
Smith, E. J. (A)
Sobel, A. D. (M)
Stadheim, K. (A)
Stang, R. A. (A)
Talley, D. (SM)
Taylor, I. R. (A)
Tehan, M. F. (A)
Treanor, P. A. (A)
Trees, A. E. (A)
Trimboli, B. J. (A)
Turczyn, W. A. (VA)
Turner, F. T. (A)
Vergeichik, J. (M)
Virgadamo, F. (M)
Volpe, I. D. (M)
Waicule, D. (A)
Wallach, D. M. (A)
Ward, J. W. (A)
Warshaw, D. (A)
Weber, E. (SM)
Weinberg, S. (A)
Weinschel, B. O. (A)
Wendroff, M. (A)
White, C. E. (A)
White, E. S. (A)
White, R. L. (A)
Whitehead, J. C. (VA)
Wimpie, S. (A)
Winter, D. W. (A)
Wolff, J. (A)
Wolk, N. I. (A)
Wynne, W. M. (VA)
Yaffe, P. (A)
Yankofsky, M. (A)
Yelsky, B. (A)
Yeomans, P. C. (A)
Youngblood, I. J. (A)
Zaretsky, S. (A)
Zdan, W. (A)
Zeiger, L. B. (VA)
Zimet, B. L. (A)
Zimmerman, S. (A)
Zupnick, I. N. (A)

Niagara Falls
Bovee, B. A. (VA)
Lidbury, F. A. (SM)
Rogers, K. E. (VA)
Rowe, R. G. (A)

Northport, L.I.
Havstad, H. (VA)
Smaha, N. F. (A)

North Tarrytown
Akin, R. M. (VA)

North Tonawanda
Hayslett, L. E. (VA)
Perry, C. S., Jr. (A)
Schmidt, F. M. (VA)

Oceanside, L.I.
Dreyer, J. F., Jr. (SM)
Wilkens, W. B. (A)

Olean
Atherton, O. L. (A)
Reese, F. A. (A)

Oneida
Jones, D. H. (A)

Ossining
Lebel, C. J. (SM)

Oyster Bay, L.I.
Adams, E. W., Jr. (A)
James, G. W. (M)

Oyster Bay Cove, L.I.
Byrne, J. F. (SM)

Ozone Park, L.I.
Mellard, J. (A)
Simon, L. (A)

Patchogue, L.I.
Young, C. H. (A)

Pearl River
Knaack, F. E. (A)
McElroy, G. E. (A)

Peekskill
Gilleo, W. L. (A)

Pelham
Chenery, P. J. (A)

Penn Yan
Swing, M. J. (A)

Plainview, L.I.
Horbach, S. (M)

Plattsburg
King, J. (A)

Point Lookout, L.I.
Clemens, G. J. (A)

Point Pleasant
Bullis, O. F. (A)
Moxon, A. W. (VA)

Port Chester
Fingerle, W., Jr. (VA)
Goodwin, C. W. (VA)
Koch, H. J. (A)
Lombardi, E. H. (A)
Porter, H. A. (A)

Port Jefferson, L.I.
Dow, O. E. (VA)
Hansell, C. W. (F)
Houghton, W. D. (A)
Lerch, Q. A., Jr. (A)
Lindenblad, N. E. (SM)
Watson, C. W. (A)

Port Richmond, S.I.
Taylor, J. C. (A)

Port Washington, L.I.
Boyer, B. E. (A)
Clark, R. W. (VA)
Erickson, J. S. (A)
Freeman, R. L. (SM)
Harvey, H. C. (A)
Hoyt, W. S. (A)
Lee, J. A. (A)
Little, D. S. (VA)
Mac Adam, W. K. (VA)
Pell, W. F., Jr. (VA)
Wagner, F. W. (A)

Potsdam
Record, F. A. (A)
Stiles, J. L. (VA)

Poughkeepsie
Northrop, P. A. (VA)
Phillips, F. G., Jr. (A)
Pickarski, S. (A)
Renke, A. W. (A)
Saling, D. M. (A)

Purchase
Halstead, W. S. (SM)

Queens Village, L.I.
Adams, B. N. (A)
Del Giorno, A. E. (A)
DuVal, M. V. (A)
Griemsmann, J. W. E. (A)
Hansen, E. L. (VA)
Ruppel, A. E. (A)
Sypher, E. L., Jr. (VA)
Uzzell, W. C. (A)
Yeager, J. R. (A)

Randall Manor, S.I.
Rodwin, G. (SM)

Rego Park, L.I.
Black, H. S. (SM)
McLinden, J. E., Jr. (A)

Richmond Hill, L.I.
Holzman, G. R. (A)
Knuth, H. G., Jr. (A)
Mainberger, W. A. (A)
Oakes, R. E. (A)
Picardy, P. (A)
Relson, M. (M)
Rossoff, A. L. (A)
Stellwagen, F. W. (VA)
Wolf, H. (A)
Woodruff, E. T. (A)

Ridgewood, L.I.
Brodsky, L. J. (A)
La Via, J. (A)
Pelitsch, E. J. (A)

Riverhead, L.I.
Atwood, J. B. (SM)
Bliss, W. H. (A)
Braaten, A. M. (SM)
George, R. W. (SM)
Goddard, D. R. (VA)
Hansell, G. E. (A)
Long, A. W. (A)
MacLean, K. G. (SM)
Moore, H. A. (A)
Olsen, W. E. (A)
Peterson, H. O. (F)
Rundquist, E. C. (VA)
Schock, R. E. (VA)
Schoenborn, F. J. W. (VA)
Taylor, H. A. (VA)
Trevor, B. (SM)
Wickizer, G. S. (VA)
Winans, P. V. (VA)

Rochester
Alger, P. B. (A)
Anderson, R. S. (VA)
Andzer, A. (A)
Angevine, O. L., Jr. (SM)
Balling, A. W. (VA)
Bellor, W. F. (VA)
Biggar, R. A. (A)
Brauer, H. H. (SM)
Brown, W. J. (VA)
Chalmers, E. D. (A)
Chesna, J. S. (A)
Cooley, R. D. (A)
Corp, D. E. (A)
Cotter, W. F. (SM)
Davis, K. E. (A)
De Mers, E. F. (A)
Dobbin, R. R. (A)
Driscoll, G. S. (A)
Dubridge, L. A. (F)
Ferry, R. N. (M)
Finnigan, C. W. (VA)
Foster, C. W. (A)
Gardner, K. J. (M)
Gilhousen, L. E. (A)
Gordon, H. E. (VA)
Harris, L. M. (M)
Haupt, G. H. (VA)
Henderson, K. L. (VA)
Herrick, M. P. (A)
Holbrook, R. O. (A)
Holstrom, A. (VA)
Huntington, M. B. (VA)
Hutchinson, F. B. (A)
Kantor, M. (A)
Karker, E. C. (M)
Klumb, H. J. (VA)
Larsen, M. J. (SM)
Lovick, E., Jr. (A)
Maichle, R. E. (A)
Malone, W. J. (A)
Manson, R. H. (F)
McCanne, L. (SM)
Melloh, A. W. (SM)
Newlon, A. E. (SM)
O'Brien, B. C. (A)
Odell, N. H. (A)
Plotkin, L. E. (A)
Reynolds, F. L. (A)
Rice, H. E. (SM)
Ridley, W. H., Jr. (A)
Rodgers, J. A. (VA)
Roos, P. A. (A)
Sanderson, F. C. (A)
Schmidt, P. S. (A)
Schoen, A. L. (M)
Sheppard, M. H. (A)
Shurkus, A. A. (A)
Sibley, H. C., Jr. (A)
Stevenson, H. (M)
Talpey, R. G. (M)
Tepper, C. W. (A)
Tholstrup, H. (SM)
Town, G. R. (SM)
Welch, P. R. (A)
Wilson, E. S. (SM)
Wyman, B. D. (A)
Yeaton, E. C. (A)

Rockville Center, L.I.
Cardwell, A. D. (VA)
De Weese, H. W. (VA)
Everett, F. C. (VA)
Hoxie, I. R., Jr. (A)
Jenks, F. A. (A)
Lester, P. S. (A)
Leuteritz, H. C. (VA)
Rockett, F. (A)
Singer, F. J. (SM)
Smith, Z. R. (A)
Uzmann, G. J. (SM)

Rocky Point, L.I.
Carter, P. S. (SM)
Clifton, B. S. Y. (SM)
Goldstine, H. E. (VA)
Peterson, L. E. (A)
Usselman, G. L. (VA)
Young, L. L. (A)

Rome
Schatz, F. V. (A)

Roosevelt, L.I.
Adachi, W. Y. (VA)
Bassler, S. G. (A)

Roslyn Heights, L.I.
Brown, W. E. (A)
Seeley, S. W. (F)

Rye
Hamilton, S. H. (A)

Saint Albans, L.I.
Behr, J. (A)
Bloom, L. (A)
Edwards, H. H. (M)
Holetz, A. C. (VA)
Rothenberg, S. M. (VA)
Smedes, R. L. (A)

Sayville, L.I.
Hart, F. A. (VA)

Scarsdale
Appel, J. H., Jr. (VA)
Chertok, S. L. (A)
Page, H. C. (SM)

Schenectady
Abrahams, I. C. (A)
Ahern, W. R. (A)
Alexanderson, E. F. W. (F)
Andrews, P. D. (SM)
Austin, R. W. (A)
Bailey, F. M. (M)
Baldwin, C. F. (SM)
Bauersfeld, C. F. (A)
Beebe, W. J. (A)
Blewett, J. P. (A)
Bones, T. M., Jr. (A)
Bonness, Q. L. (M)
Bornstein, I. (A)
Borst, D. W. (A)
Bratlie, O. J. (A)
Brockner, C. E. (A)
Broughton, W. G. (VA)
Brown, W. W. (SM)
Caldwell, P. G. (A)
Chapin, W. T. (A)
Chin, P. (A)
Clapp, C. W. (A)
Cleary, E. P. (A)
Cobine, J. D. (SM)
Conway, M. J. (A)
Cramer, S. (A)
Cummings, H. (M)
Daloisio, V. G. (A)
Davids, H. H. (A)
Dehn, R. A. (M)
DeWalt, K. C. (SM)
Dickey, F. E. (A)
Dickinson, T. M. (VA)
Downie, J. W. (SM)
Duckwald, C. S., Jr. (A)
Dunham, S. B. (M)
Dunn, J. L. (A)
Dunton, G. H. (A)
Dushman, S. (SM)
Earls, H. G. (VA)
Ewing, L. M. (A)
Farrell, J. J. (A)
Fitch, W. M., Jr. (A)
Fitzmorris, S. R. (M)
Floyd, G. H. (M)
Ford, W. A. (SM)
Fraenckel, V. H. (VA)
Freeman, R. W. (A)
Fritschel, E. H. (A)
Gardner, G. F. (VA)
Garratt, P. M. (A)
Granberry, H. W. (A)
Grover, F. W. (SM)
Gurewitsch, A. M. (SM)
Hausz, W. (A)
Henyan, G. W. (VA)
Herzog, E. F. (A)
Hodgers, R. W., Jr. (A)
Holder, F. P. (A)
Hudspeth, T. (A)
Hull, A. W. (F)
Hundstad, C. E. (A)
Jacob, D. M. (A)
Jenks, D. W. (SM)
Jensen, R. C. (VA)
Johnson, T., Jr. (SM)
Jones, J. L. (VA)
Junken, L. H. (VA)
Kahnke, J. (A)
Kessler, G. W. (A)
Kirkpatrick, G. M. (M)
Kluender, E. C. (A)
Kovacs, F. M. (A)
Lake, C. J. (A)
Langenwalter, D. F. (A)
Larew, J. J. (A)
Larrick, C. V. (VA)
Lederer, E. H. (A)
Lee, E. S. (SM)
Leeds, L. M. (SM)
Lewis, R. V. (A)
Lewis, W. A., Jr. (A)
Liimatainen, T. M. (M)
Longfellow, R. C. (A)
Losey, J. J. (A)
Louden, W. C. (A)
Manke, A. G. (VA)
Marvin, H. B. (SM)
Maser, H. T. (SM)
Mayer, H. F. (VA)
Maynard, J. E. (VA)
McArthur, E. D. (F)
Meahl, H. R. (M)
Michel, P. C. (SM)
Miller, F. G. (A)
Mills, T. L. (A)
Moe, R. E. (VA)
Moles, F. J. (SM)
Moore, R. A. (A)
Morgan, R. E. (A)
Morrison, R. H. (A)
Mumford, L. G. (A)
Myers, A. F. (A)
Nelson, J. E. (A)
Neuland, J. G. (A)
Nye, W. H. (A)
Ogle, H. M. (A)
Parkhurst, R. G. (A)
Patterson, F. G. (VA)
Pester, R. F. (A)
Peters, P. H., Jr. (A)
Peterson, E. F. (M)
Phillips, J. N. (A)
Pike, O. W. (SM)
Pinkerton, D. C. (A)
Pohl, R. V. (A)
Pollock, R. D. (A)
Porter, R. W. (A)
Prince, D. C. (SM)

Purcell, W. J. (VA)
Quijano, R. A. (A)
Ray, J. (A)
Reinsmith, G. M. (A)
Reque, S. G., Jr. (A)
Reynolds, F. M. (VA)
Reynolds, M. T. (M)
Rhodehamel, A. J. W. (A)
Rice, C. W. (F)
Ringland, R. S. (A)
Sampson, E. S. (A)
Samsel, R. W. (A)
Sayles, P. W. (A)
Schlafly, H. J., Jr. (A)
Schramm, M. C. (A)
Schwarzhaupt, P. J. (VA)
Shepard, B. R. (A)
Shivell, D. L. (A)
Smith, F. W. (SM)
Smith, H. M. (A)
Smith, P. J. (A)
Smith, R. L. (VA)
Sobell, M. (A)
Speir, F. H. (SM)
Steinmeyer, R. J. (A)
Sturtevant, C. E. (M)
Summerhayes, H. R., Jr. (VA)
Taylor, L. A. (VA)
Taylor, T. T. (A)
Teare, W. H. (SM)
Thorson, H. L. (A)
Tripp, A. B. (VA)
Twyford, L. C., Jr. (A)
Uglow, K. M., Jr. (A)
Uren, D. E. (A)
Watson, R. P. (M)
Watters, R. L. (A)
Webber, S. E. (A)
Wells, H. D., Jr. (M)
Whinnery, J. R. (SM)
White, G. M. (M)
White, W. C. (F)
Whitman, A. J. (A)
Wiggin, J. F. (A)
Wild, J. J. (A)
Wilson, T. M. (M)
Yerian, C. S. (VA)

Scotia
Anderson, H. W. (VA)
Bachman, C. H. (VA)
Bunger, J. W. (A)
Campbell, V. C. (M)
Chalberg, H. W. A. (A)
Chambers, D. E. (SM)
Cochran, K. (A)
Cook, E. D. (F)
Coolidge, A. W., Jr. (A)
Curtis, T. P. (M)
Downes, L. C. (A)
Elder, T. A. (SM)
Fancher, H. B. (A)
Gardiner, P. C. (SM)
Hahn, W. C. (SM)
Keister, J. E. (A)
Norgaard, D. E. (VA)
Pumphrey, F. H. (SM)
Rothe, F. S. (A)
Stein, A. J. (A)
Strempel, E. L. (A)
Towlson, H. G. (A)
Travis, E. F. (A)
Wigington, W. H., Jr. (A)

Sea Cliff, L.I.
Buchtenkirch, A. J. (A)
Hoadley, G. B. (SM)

Sidney
Maylott, C. F. (VA)

Slingerlands
Dillenback, G. V., Jr. (A)
Naum, L. H. (M)

Southampton, L.I.
Buckingham, W. D. (A)
Homer, E. C. (SM)

South Ozone Park, L.I.
Butterweck, H. W. (A)
Koleda, J. T. (A)
Samoluk, P. (A)

Spring Brook
Jones, E. J. (A)

Springfield Gardens, L.I.
Berthold, R. V. (A)
Kolz, C. T. (A)

Spring Valley
Rosenbaum, J. (VA)

Stafford
Sheffer, O. N. (VA)

Staten Island
Avins, J. (A)
Embrechts, A. C. (VA)
Kelly, L. J. (A)
Lowney, D. J., Jr. (A)
Puntin, E. J. (VA)

Stewart Manor, L.I.
Dewhirst, T. P. (VA)
Peckham, H. D., Jr. (A)

Sunnyside, L.I.
Florez, H. (SM)

Syosset, L.I.
Thomas, E. U. (M)

Syracuse
Baker, W. R. G. (F)
Belle Isle, A. G. (A)
Bennett, H. W. (M)
Brannen, C. W. (A)
Brown, G. M. (A)
Campbell, C. M., Jr. (VA)
Chapman, J. K. (A)
Copp, J. H. (M)
Croner, A. J. (A)
Crosby, H. M. (VA)
Cummings, A. P. (VA)
Davis, M. F. (M)
Davis, R. J. (A)
Dean, W. W. (A)
Epstein, D. J. (A)
Fritschel, P. G. (VA)
Geer, H. L. (A)
Geer, K. E. (A)
Hawes, B. K., Jr. (M)
Hiehle, M. E. (A)
Keith, E. G. (A)
Kelley, J. J. (A)
Kenefake, E. W. (VA)
Knox, J. L. (A)
Learned, A. J. (A)
Mather, D. L. (A)
Mauldin, H. W., Jr. (A)
Merritt, M. L. (A)
Metcalf, G. F. (F)
Miller, J. E. (A)
Mullin, L. A. (VA)
Muntz, W. E. (A)
Peterson, N. J. (A)
Pinard, A. J. (A)
Priest, C. A. (SM)
Randall, D. P. (VA)
Scheldorf, M. W. (VA)
Shea, R. F. (SM)
Steates, E. F. (VA)
Stonger, W. L. (A)
Upham, S. W. (A)
Watts, D. E. (VA)
Weir, I. R. (SM)
Wilcox, J. F. (VA)
Williamson, R. H. (M)
Woodruff, T. E. (A)
Yungwirth, G. J. (A)

Tappan
Ulrich, E. C. W. (A)

Tarrytown
Chioma, L. D. (A)
Deme, J. (A)

Tonawanda
Mitchell, F. A. (A)
Young, W. R. (A)

Troy
Bedrossyan, M. D. (A)
Hall, C. F. (A)
Harris, H. D. (VA)
Norvik, F. J. (A)
Seifert, W. W. (A)
Sleight, J. W. (A)
Stoker, W. C. (VA)

Tuckahoe
Austin, K. B. (VA)
Collison, P. B. (SM)
Drew, C. E. (SM)

Tuxedo Park
Loomis, A. L. (F)

Utica
Dowdell, J. T. (A)

Valhalla
Masterson, J. F. (A)
Parr, A. F. W. (A)

Valley Stream, L.I.
Hansen, J. A. (A)
Harley, J. B. (VA)
Voelpel, J. (A)
Woodbury, W. F. (M)

Waterford
Huftill, A. W. (A)

Watertown
Bonadio, G. A. (A)
Morgan, C. W. (A)
Yonkovig, M. R. (A)

Watervliet
Lavoo, N. T. (M)
Maclay, F. P.(A)

West Brighton, S.I.
Anderson, W. A. (A)
Gallonio, A. (A)

Westbury, L.I.
Bergen, R. S. (A)
Eldredge, E. E. (VA)
Proskauer, R. (A)

West Hempstead, L.I.
Boyd, H. W., Jr. (A)
Koch, H. W. (A)
Palmer, W. (A)
Thiede, F. C. W. (VA)

West Point
Honnell, P. M. (SM)

West Sayville, L.I.
Mentcher, I. (A)

White Plains
Adler, B. (VA)
Barnes, J. C. (VA)
Carter, R. H. (A)
Fearing, J. L. (VA)
Fetherolf, J. M. (A)
French, E. C. (VA)
Gano, A. S. (A)
Goddess, E. D. (A)
Griggs, E. V. (VA)
Hart, B. L. (A)
Lamarque, J. W. (VA)
Schwerin, P. (SM)
Seitz, F. A. (VA)
Smack, J. C. (VA)
Spaulding, F. E., Jr. (VA)

Whitestone, L.I., N. Y.
Davenport, W. B., Jr. (A)

Williamsville
Janowsky, R. H. (A)
Kuhn, H. G. (A)
Pifer, M. J. (A)
Pontius, J. C. (A)

Williston Park, L.I.
Ghirlando, F. L. (A)

Woodhaven, L.I.
Day, E. C. (A)
Derganc, W. (A)
Hintz, R. T. (VA)
Ley, B. J. (A)

Woodside, L.I.
Drougalis, J. V. (A)
Ebert, J. E. (A)
Grazda, E. E. (A)
Keith, W. S. (A)
Middleton, R. G. (A)
Ostheimer, E. J. (A)
Rehberg, L. H. (A)
Reuman, W. H. (VA)
Thogersen, G. O. (A)
Truhlar, J. (A)

Woodstock
Van Ryn, J. C. (A)

Yonkers
Allerton, G. L. (A)
Ames, I. M. (A)
Benedetti, J. (A)
Campbell, J. A. (A)
Carpenter, A. G., Jr. (A)
Caselli, V. J. (A)
Crawford, R. V. (A)
Hesse, G. L. (A)
Landry, A. W. (A)
Latzer, R. I. (A)
Looney, L. A. (VA)
Lynch, H. G. (A)
Merrill, F. G. (A)
Runyon, C. R., Jr. (VA)
Ryan, J. U. C. (A)
Tatum, F. W. (A)
Williams, J. J. (A)

NORTH CAROLINA

Asheville
Blackstock, H. W. (A)
Hoskins, C. B. (A)
Jackson, E. D. (A)
Morgan, Z. K., Jr. (A)

Chapel Hill
Caldwell, E. E. (A)

Charlotte
Carey, J. G. (A)
Caudle, L. L., Jr. (M)
Howell, E. R., Jr. (A)
Minor, M. J. (A)
Ramsey, R. W. (VA)
Smith, S. S. (M)
Stewart, A. E. (VA)

Clinton
Vann, I. M., Jr. (A)

Draper
Swinney, J. G. C., Jr. (A)

Durham
Seeley, W. J. (VA)
Trippe, D. F. (A)

Elizabethtown
Baird, J. W. (A)

Farmville
Palmer, W. G. (A)

Greensboro
Harrell, L. B. (A)
James, C. T. (A)
Lockhart, J. C., Jr. (A)
Marteena, J. M. (VA)

Hamlet
Altman, F. J. (A)

Hickory
Morrison, C. R. (A)
Morrison, E. D. (A)

High Point
Wetherell, A. L. (A)

Lake Toxaway
Miller, A. T. (A)

Marion
Dillon, P. (A)

Raleigh
Brennecke, C. G. (VA)
Brown, S. H. (A)
Carley, W. S. (M)
Hulick, H., Jr. (VA)
Seagraves, W. P. (A)

Rocky Mount
Murphrey, I. G. (A)
Strum, P. D. (A)

Washington
Jowdy, M. (VA)

Wilmington
Peebles, N. A. (A)
Ryssy, J. W. (VA)

Wilson
Day, J. L. (A)

Winston-Salem
Hedrick, P. F. (A)
Ivester, H. E. (A)
Keller, D. F. (A)
Rice, W. E. (A)

NORTH DAKOTA

Bismarck
Nelson, I. (M)

Fargo
Dodge, W. A., Jr. (A)
Hetland, J. M. (VA)

Fessenden
Zobel, E. R. (A)

Grand Forks
Rook, C. W. (A)

Hampden
Harpster, W. T. (A)

Jamestown
Amoo, L. R. (A)

Minot
Stenersen, H. P. (A)

Sheyenne
Rudy, E. W. (A)

OHIO

Akron
Bock, A. W. (A)
Bosomworth, G. P. (VA)
Brennan, L. J. (VA)
Goff, L. O. (A)
Huffman, E. B. (A)
Schott, S. (A)
Shewchik, S. (A)
Shively, H. G. (A)
Smith, P. C. (VA)

Alliance
Deming, A. F. (A)
Unger, J. W. (A)

Amherst
Young, M. L. (A)

Ashtabula
Keskinen, A. R. (M)
Morrison, H. F. (A)
Munsell, R. S. (A)

Athens
Green, D. B. (VA)

Atwater
Kline, H. J. (A)

Avon Lake
Dobosy, J. F. (A)

Barberton
Austin, A. O. (F)

Bay Village
Schneider, P. (A)
Swanker, W. C. (A)

Bedford
Jerome, W. R. (VA)

Bellefontaine
Weisz, H. (A)

Bellevue
Walborn, D. E. (A)

Berea
Sanderson, R. B. (A)

Bexley
Brooke, E. F. (M)
Rasnack, J. J., Jr. (A)

Blanchester
Saville, H. F. (A)

Blue Ash
Hook, C. T. (A)

Brady Lake
Redmond, J. F. (A)

Brecksville
Banfer, K. J. (VA)
Csensich, J. E. (A)
Ulrich, J. F. (VA)

Bryan
Davis, D. D. (A)

Canton
Duff, J. E. (A)
Leist, L. G. (A)
Phillips, W. M. (VA)
Regen, R. R. (A)
Walker, N. S. (VA)

Chagrin Falls
Sanborn, C. B., Jr. (A)

Cheviot
Dresch, R. (A)
Spinner, L. N. (A)

Cincinnati
Adams, R. F. (A)
Alberts, W. S. (M)
Baylor, A. D. (M)
Bereskin, A. B. (M)
Biedenbender, R. (M)
Bissonette, A. J. (M)
Bonney, R. B. (SM)
Boothe, A. M. (A)
Bopp, C. C. (A)
Brouse, H. L. (M)
Bussard, E. J. H. (SM)
Canady, D. R. (A)
Cary, C. A. (A)
Clark, N. C. (A)
Clement, L. M. (F)
Clutterbuck, E. L. (A)
Cohen, J. S. (M)
Crosley, P., Jr. (SM)
Day, C. E. (M)
Duncan, J. R. (M)
Ebbeler, J. R. (A)
Emmerich, W. S. (A)
Emmerling, E. J. (A)
Fischer, R. E. (A)
Foster, A. P. (M)
Fowler, R. W. (A)
Frommer, J. C. (A)
Garoutte, C. D. (A)
Gillette, A. D. (VA)
Gruber, J. R. (A)
Haehnle, C. G. (A)
Hancock, H. E. (M)
Himes, H. D. (A)
Hoeltge, E. J. (A)
Hollis, J. L. (M)
Huber, H. E. (A)
James, D. C. (M)
Joos, E. M. (A)
Jordan, D. M. (VA)
Kilgour, C. E. (SM)
King, F. W., Jr. (M)
Kirschner, L. (A)
Kiss, J. S. (M)
Knoblaugh, A. F. (M)
Kocher, J. R. (A)

Kolks, R. H. (VA)
Konkle, P. J. (M)
Lantzer, F. N. (M)
Ledbetter, J. B. (A)
Lehnhoff, R. G. (VA)
Lepple, H. (M)
Leydorf, G. F. (SM)
Lockwood, E. C. (M)
Marischen, J. P. (A)
McDonald, J. M. (M)
Montgomery, W. D. (M)
Nester, W. B. (A)
Noble, H. V. (SM)
Novy, E. W. (M)
Oker, W. A. (M)
Osterbrock, W. C. (SM)
Pool, E. B. (A)
Quitter, J. P. (M)
Richardson, D. (A)
Robson, C. A. (A)
Rockwell, R. J. (F)
Rolston, W. S. (A)
Sandberg, D. A. (M)
Schenck, R. L. (M)
Schneider, C. A. (A)
Shirk, W. B. (M)
Sloan, C. B. (M)
Southern, C. O. (A)
Stubbins, W. F. (A)
Symons, W. E. (M)
Taylor, G. O. (A)
Thornell, J. H. (A)
Turrell, R. M. (M)
Uphaus, R. H. (A)
Wahl, A. C. (M)
Weber, C. E. (M)
Wedig, F. L. (M)
Wissel, F. A. (M)
Witt, L. F. (M)
Young, P. A. (M)
Zimov, L. R. (A)
Zlatin, N. (A)

Cleveland
Ackerman, E. K. (VA)
Akers, W. F. (A)
Altmayer, J. (A)
Babinchak, J. B. (A)
Baerwald, H. G. (VA)
Ballasch, L. J. (A)
Benkelman, G. F. (VA)
Blue, C. L. (A)
Bossard, G. L. (M)
Buhl, W. T. (VA)
Carment, C. A. (A)
Caskey, H. B. (A)
Chatterton, L. N. (VA)
Cottrell, H. R. (A)
Cupps, H. T. (A)
David, B. W. (SM)
Deuring, W. G., Jr. (A)
Dittenberger, R. J. (A)
Elmendorf, D. E. (A)
Flack, S. G. (VA)
Friedberg, M. R. (A)
Friswold, F. A. (A)
Geczi, J. J. (VA)
Haden, J. C. (A)
Hansen, R. E. (A)
Heintz, R. M. (F)
Heinzelman, G. J. (M)
Holmes, T. B. (A)
Hoover, P. L. (SM)
Jerauld, A. N. (VA)
Jurman, H. R. (A)
Keachie, J. H. (VA)
Kline, R. L. (A)
Krebs, R. P. (A)
Kres, A. J. (A)
Leemon, W. (A)
Leggett, W. S. (A)
Martin, E. E. (A)
McCollister, D. R. (A)
McMahon, A. M. (VA)
Messitt, J. B. (A)
Nace, A. S. (A)
O'Gara, J. J. (A)
Okeson, H. B. (VA)
Pierce, R. M. (SM)
Pitzer, J. H. (A)
Plakadis, A. P. (VA)
Pritchard, W. S. (A)
Robertson, W. W. (VA)
Roehrer, C. R., Jr. (A)
Schilling, M. O. (M)
Schramm, F. B. (M)
Sherman, K. S. (A)
Shields, A. B. (A)
Smith, C. E. (SM)
Snedeker, M. L. (M)
Spector, S. (A)
Sutto, J. F. (A)
Walker, F. R. (A)
Watson, B. S. (A)
Weiss, W. A. (A)
Wells, M. M. (A)
Wieland, E. S. (A)
Williams, H. C. (VA)
Winter, L. L. (M)
Zelle, J. F. (A)

Cleveland Heights
Brown, W. J. (SM)
Fox, R. A. (SM)

Leonard, S. E. (SM)
Massa, F. (VA)
Scofield, P. F. (SM)
Scott, E. P. (A)

Columbus
Anthony, G. E. (A)
Barber, G. C. (A)
Bauer, W. (M)
Bierkamp, C. S., Jr. (A)
Bonnet, E. F. (A)
Boone, E. M. (A)
Brown, R. W. (A)
Bryant, R. V. (A)
Butler, J. P. (A)
Cleckner, D. C. (A)
Colton, F. S. (A)
Crisante, A. E. (VA)
Darling, W. (A)
Foley, G. M. (A)
Friedman, S. N. (A)
Glass, B. J. (A)
Hayden, J. R. (A)
Higgy, R. C. (SM)
Hoagland, J. H. (A)
Hritsko, S. (A)
Ishmael, O. L. (A)
Jaeger, J. H. (A)
Jones, E. A. (A)
Kahn, D. A. (A)
Lamp, L. B. (A)
May, L. U., Jr. (A)
Myers, K. R. (A)
Nafzger, L. H. (VA)
Nelson, P. H. (SM)
Roshon, J. R. (A)
Schumacher, C. M. (A)
Sinclair, G. (VA)
Sisson, E. D. (A)
Sutton, J. R. (A)
Vaughan, E. W. (M)
Volf, C. A. (A)
Wright, J. H. (A)
Wright, P. C., Jr. (A)
Young, D. A. (VA)
Young, P. D. (A)

Crestline
Flockencier, W. E. (A)

Cuyahoga Falls
Du Bois, W. R. (VA)
Miller, R. F. (A)
Wildermuth, J. L., Jr. (A)

Dayton
Adams, E. L. (A)
Albano, J. A. (A)
Allen, F. W. (A)
Allison, D. M., Jr. (A)
Amrhein, O. C. (A)
Andres, P. G. (VA)
Antman, M. A. (M)
Apple, R. C. (VA)
Archibald, L. H. (A)
Backer, C. M. (M)
Bassett, D. M. (A)
Bickel, H. I. (A)
Biddle, W. G. (A)
Black, G. W. (A)
Blackman, B. A. (A)
Boeckerman, L. F. (M)
Bowers, J. L. (A)
Braden, P. F. (A)
Braverman, N. (A)
Bucher, F. X. (A)
Buehler, M. E. (A)
Carney, C. W. (A)
Carpenter, F. H. (A)
Charlton, V. E. (A)
Cherpeski, R. P. (M)
Clark, R. R. (A)
Cleveland, E. L. (A)
Collar, H. W. (A)
Conn, J. A. (A)
Connell, L. H. (A)
Conover, R. E. (A)
Conrad, C. G. (A)
Coombs, J. M. (A)
Copp, R. S. (A)
Cunningham, L. W. (A)
Desch, J. R. (A)
De Vore, L. T. (SM)
Dicke, A. H. (A)
Dietrich, D. J. (M)
Draganjac, M. J. (A)
Dunn, E. C. (A)
Dybdal, M. B. (A)
Eaton, W. G. (SM)
Ebert, H. J. (A)
Eckert, C. C. (VA)
Ensall, T. (M)
Eshbaugh, I. P. (A)
Forcier, R. A. (A)
Friedman, H. (A)
Gainen, J. (A)
Gardner, F. H. (A)
General, J. (M)
Gettles, R. A. (A)
Gilfilen, L. J. (A)
Goldman, A. (M)
Greger, H. H. (A)
Griffing, B. L. (M)
Guernsey, G. F. (A)
Gunther-Mohr, G. R. (A)
Hagstrum, W. R. (A)
Haller, G. L. (SM)
Hallman, L. B., Jr. (SM)
Hasbrook, A. F. (A)
Hauser, P. D. (VA)
Hearsum, D. R. (A)
Henderson, A. B. (A)
Hendricks, L. A. (SM)
Herson, J. L. (VA)
Heyd, J. W. (A)
Hill, W. M. (A)
Hilmer, W. R. (A)
Holloway, F. L. (SM)
Hull, R. (A)
Ittelson, R. W. (A)
Jacobs, M. (SM)
Jameson, R. D. (A)
Joller, C. R. (A)
Kantrowe, J. H. (A)
Kaplan, M. (A)
Katz, L. (M)
Kenney, F. N. (A)
Kern, J. I. (A)
Kester, R. E. (A)
Keto, J. E. (A)
Kidd, G. B. (VA)
Kilheffer, L. D. (VA)
King, H. B. (M)
Klopf, J. A. (A)
Knight, A. R. (M)
Koontz, R. H. (A)
Krevsky, S. (A)
Kuhlmen, P. W. (VA)
Langston, G. A. (A)
Lauth, R. E. (A)
Lawrance, R. T. (A)
Lawson, S. A. (A)
Levan, H. C. (A)
Littell, C. C., Jr. (A)
Lord, A. S. (A)
Manning, F. W. (A)
Marshall, C. J. (SM)
McCleece, H. M. (A)
McCloud, W. W. (A)
McCoppin, E. R. (A)
McLennan, M. A. (M)
Merkle, E. C. (A)
Merley, G. A. (A)
Meth, I. (A)
Moore, W. E. (A)
Moseley, F. L. (VA)
Mumma, R. E. (A)
Nelson, N. A. (A)
Newsom, E. G. (A)
Nexon, V. J. (A)
Nightenhelser, K. W. (A)
Noble, J. C. (A)
Olsen, O. C. (A)
Overholt, R., Jr. (VA)
Parker, A. P. (VA)
Perper, L. J. (A)
Peters, A. L., Jr. (VA)
Pile, D. H. (A)
Pollack, P. (A)
Pummill, J. S. (A)
Quayle, V. H. (A)
Rappaport, G. (M)
Reintjes, I. C. (A)
Retter, C. T. (VA)
Richmond, L. P. (M)
Robb, D. E. (SM)
Rounds, J. M. (A)
Rudner, M. A. (A)
Rychlik, R. F. (A)
Schantz, G. W. (A)
Schart, W. J. (A)
Scheer, G. H., Jr. (SM)
Selke, G. H. (A)
Senn, P. J. (A)
Shaw, C. E. (VA)
Shepherd, W. (A)
Sickels, W. H., Jr. (A)
Skoller, M. (A)
Spencer, S. W. (VA)
Springer, P. W. (A)
Stewart, J. A. (VA)
Storck, H. C. (M)
Sukup, J. P. (A)
Sullivan, W. L. (A)
Svancara, V. J. (A)
Taylor, P. B. (SM)
Thacker, W. E. (A)
Tucker, J. W. (A)
Van Dyck, K. A. (M)
Vendely, B. (A)
Walker, L. (A)
Walker, W. D. (A)
Warriner, R. R. (A)
Watton, A. (A)
Webb, R. C. (A)
Wedekind, O. G. (A)
Weis, C. F. (A)
Weiss, M. M. (A)
Weissman, S. (M)
Welker, J. W. (VA)
Wilkie, H. (A)
Wong, M. S. (A)
Woodruff, C. M. (A)
Yeager, H. R. (SM)
Yolles, J. (SM)
Young, L. M. (SM)
Zajaczkowski, J. A. (A)

Delaware
Miller, L. E. (A)

Elyria
Boyd, D. L. (A)
Finegold, I. (A)
Mull, H. R. (A)
Smith, C. W. (A)

Fairfield
Lingard, A. (A)

Fostoria
Bishop, B. E. (A)

Franklin
Eldridge, H. C., Jr. (M)

Galion
Blashfield, W. H. (A)
Shuey, P. F. (VA)
Strickler, W. A., Jr. (VA)

Gibsonburg
Risenburg, L. C. (A)

Granville
Marlow, W. C., Jr. (VA)

Greentown
Myers, W. D. (A)

Grove City
Barbee, V. A. (A)

Hamilton
Norton, T. S. (A)
Staege, S. A. (VA)

Hudson
Hill, J. S. (A)

Ironton
Loftis, H. J. (VA)

Kinsman
Rueger, L. J. (A)

Lakewood
Bidlack, C. S. (VA)
Bowditch, F. T. (M)
Dutton, C. E. (VA)
Gorstick, G. E. (VA)
Hamman, G. B. (VA)
Stoffel, L. L. (VA)
Widlar, W. L. (A)

Lancaster
Hummel, J. F. (A)
Stalder, L. R. (A)

Lima
Exner, D. W. (A)
Mershon, C. L. (A)

Lockland
Hoeper, H. B. (A)
Siddle, W. T. (A)

Lorain
Goodell, W. A. (A)
Heisner, D. A. (M)
Huge, H. M. (A)
Romoser, P. E. (A)
Van Deusen, R. K. (A)

Lucas County
Keller, C. A. R. (A)

Mansfield
Kissel, M. M. (A)

Marietta
Manley, E. (VA)

Mason
Woodward, R. O. (A)

Massillon
Bigler, R. R. (A)
Burckhart, L. K. (A)
Schwab, C. B. (VA)

Middletown
Christner, E. N. (VA)

Mount Healthy
Bass, H. (M)
Phillips, L. B. (M)
Reid, J. D. (M)

Mowrystown
Winkle, L. (A)

Newark
Moore, C. N. (A)

New Carlisle
Pittenger, C. H. (A)

Newcomerstown
Schroder, R. D. (A)

Niles
Coleman, R. M. (A)

North Baltimore
Schatzel, D. (A)

North Canton
Stahl, M. D. (VA)

North Olmstead
Pruitt, W. C. (VA)

Norwood
Brelsford, H. (A)
Witt, R. (A)

Oberlin
Denny, W. B. (A)
Howe, C. E. (M)

Orrville
Baker, R. S. (A)

Osborn
Archer, C. J. (A)
Crom, G. C., Jr. (SM)
Hurff, J. L. (VA)
Lyons, L. E. (A)

Parma
Hutton, W. G. (VA)
Schindler, R. W. (A)

Pitsburg
Anderson, C. W. (VA)

Proctorville
Flowers, J., Jr. (A)

Reading
Birt, R. H. (A)

Rocky River
Douglass, J. D. (A)

Saint Clairsville
McGlumphy, W. G. (A)

Salem
Tary, J. J. (A)

Sandusky
Derrick, W. A. (A)
James, A. V. (A)
Kenyon, H. S. (VA)
Moore, W. M. (A)
Wild, J. H. (A)

Shaker Heights
Bousky, S. (A)
Teplany, A. J. (A)

Solon
Westbrook, R. D. (A)

South Euclid
Atwater, W. H. (A)
Triman, E. L. (A)

Springfield
Bell, A. L. (VA)
Davis, C. R. (A)
Featherstone, S. J. (M)
Lanter, R. J. (A)
Littler, R. C. (A)
Nash, C. C., Jr. (A)
Ohmart, P. E. (A)
Rhein, G. W. (M)
Schuster, R. R. (A)
Trout, C. C. (A)
Yoder, H. F. (A)

Steubenville
Troesch, J. M. (VA)

Stow
Andresen, G. J. C. (A)

Sugar Creek
Hershberger, W. O., Jr. (VA)

Terrace Park
Jordan, J. F. (M)

Tiffin
Hartman, R. E. (A)

Toledo
Beins, J. K. (A)
Bitter, A. R. (VA)
Botticher, G. H. L. (A)
Brown, W. R. (A)
Byram, E. T. (A)
Keck, M. W. (VA)
Ketcham, A. R. (A)
Kotlewski, J. P. (A)
Line, F. M. (A)
Mathias, B. (A)
Metzker, E. R. (A)
Neuert, H. L. (VA)
Sheehan, F. J. (A)
Stringfellow, W. M. (VA)
Stromatt, F. C. (VA)

Troy
Beach, E. R. (A)
Smedley, C. F. (A)

Upper Sandusky
Frank, M. E. (A)

Urbana
Conrad, K. (A)

Vermilion
Fiorilli, N. J. (A)

Versailles
Pepiot, L. S. (A)

Vincent
Smith, D. I. (A)

Warren
Klentz, L. M. (A)
Marzullo, S. (A)

West Carrollton
Drake, R. L. (VA)

Westerville
Bischoff, C. W. (A)

West Milton
Shellhaas, R. D. (A)

Willoughby
Harris, F. (A)

Wooster
Schenck, J. (A)

Wyoming
Bolenbaugh, R. K. (M)
Foster, D. (M)

Xenia
Brown, W. N., Jr. (SM)

Youngstown
Dieringer, F. A. (VA)
Phillips, R. G. (A)

OKLAHOMA

Ada
McArthur, H. K. (A)

Alva
Whitney, V. E. (A)

Bartlesville
Peterson, G. (VA)
Piety, R. G. (VA)

Bethany
Marrinan, H. J. (A)

Carnegie
Turner, A. L. (A)

Duncan
Stimler, S. (A)

Miami
Meador, B. M. (M)

Minco
McCulley, M. (A)

Muskogee
Heard, B. E. (A)

Oklahoma City
Ashby, R. H. (A)
Easum, C. M. (A)
Edwards, C. V. (A)
Harp, C. E. (A)
Herrmann, F. (VA)
Lovell, H. J. (VA)
Lyons, E. F. (A)
McClung, R. R. (A)
Phillips, H. E. (A)
Russell, G. D. (A)
Spooner, A. J. (A)
Thomas, M. W. (A)

Shawnee
Ricciotti, S. (A)

Stillwater
Fristoe, H. T. (A)
Kezer, C. F. (A)
Oboukhoff, N. M. (SM)

Tahlequah
Thornton, J. T. (A)

Tulsa
Beatty, C. G. (A)
Born, W. T. (VA)
Braswell, C. P. (A)
Burg, K. E. (A)
Cawood, J. L. (A)
Doll, W. R. (A)
Durham, E. R. (A)
Gibbs, J. B. (A)
Harper, F. N. (A)
Harrison, A. A. (A)
Hawkins, J. E. (A)
Hidy, J. H. (M)
Howeisen, H. T. (A)
Oliphant, L. D. (A)
Rips, E. M. (A)
Silverman, D. (A)
Stinson, L. W. (VA)

Uncas
Bacher, G. L. (A)

Woodward
Drake, H. L. (A)

OREGON

Albany
Knotts, R. B. (A)

Astoria
Ellis, P. V. (A)

Coos Bay
Harvey, L. A. (A)

Corvallis
Albert, A. L. (VA)
Dunlap, C. R. (A)
Feikert, G. S. (VA)
McMillan, F. O. (SM)
Yunker, E. A. (SM)

Echo
McFaul, Z. F. (A)

Eugene
Collins, E. H. (A)
Graham, W. B. (A)
Weeks, R. L. (A)

Garden Home
Sturley, G. (A)

Hood River
Kiyokawa, S. (A)

Junction City
Reetz, L. W. (A)

Klamath Falls
Cramer, K. H. (A)
Woodward, C. (A)

Maupin
Smith, A. V. (A)

Medford
Walker, V. G. (VA)

Milwaukee
Becker, A. (A)

Portland
Arnold, O. M. (A)
Barrows, J. H. (A)
Belleville, L. M. (VA)
Benveniste, J. (A)
Bookwalter, L. S. (VA)
Brittain, V. M. (A)
Brown, F. M. (VA)
Carlson, R. C. (A)
Claypool, W. S. (VA)
Cohen, B. B. (A)
Collette, J. H. (A)
Cutting, W. A. (M)
Deardorff, R. W. (SM)
Ditzler, D. (A)
Dodd, G. M. (A)
Ellison, G. C., Jr. (A)
Fay, F. H. (VA)
Gregory, C. M. (VA)
Griese, R. H. (A)
Hargreaves, R. F. (A)
Harris, M. S. (A)
Hoke, V. L. (VA)
James, T. W. (A)
Jett, E. E. (A)
Johnson, K. C. (M)
Kennington, W. W. (A)
Klahn, R. H. (A)
Loomis, D. D. (VA)
Lund, C. W. (A)
Marsa, A. R. (A)
McAllister, D. E. (A)
Mc Coy, R. E. (A)
McCredie, C. J. (A)
McKeon, T. (A)
McPherson, C. W. (A)
Meissner, E. R. (M)
Miller, F. E. (A)
Morey, A. M. (A)
Noyes, J. C. (A)
Parisi, F. E. (A)
Patton, W. R. (VA)
Paul, B. R. (VA)
Penniwell, A. F. (A)
Richardson, W. E. (M)
Richmond, A. E. (M)
Rudesill, E. F. (A)
Sasser, W. L. (A)
Sells, G. B. (VA)
Shreve, L. (A)
Singleton, H. C. (SM)
Smith, D. E. (VA)
Spoelstra, H. E. (A)
Steele, G. F. (A)
Steele, O. A. (VA)
Sturtevant, H. (M)
Thompson, C. R. (A)
Tunturi, A. R. (A)
Turner, H. E. (VA)
Vassallo, W. H. (A)
Vettel, V. P. (A)
Walker, R. T. (A)
White, L. C. (A)
Winkler, L. R. (VA)

Roseburg
Chandler, H. J., Jr. (A)

Salem
Anderson, H. C. (VA)
Burroughs, J. D. (A)
Morrow, R. E. (A)

Sweet Home
Kiesling, W. I. (A)

PENNSYLVANIA

Abington
Lindow, I. L. (VA)
Smith, N. F., Jr. (VA)

Aldan
Langford, J. W. (A)

Allentown
Taylor, R. R. (VA)
Weidner, R. T. (A)
Young, C. S. (VA)

Altoona
Alter, J. M. (A)
Douglass, C. F. (A)
Kline, W. F. (A)
Smith, L. L. (A)
Thielking, D. H. (A)

Amaqua
West, E. L. (A)

Ambler
Borzi, B. S. (A)

Andalusia
Sanders, E. W. (VA)

Annville
Grimm, H. H. (A)

Ardsley
Hoffmann, E. H. (M)

Arnold
Rogge, R. S. (A)

Avalon
Bennett, P. C. (A)

Bala-Cynwyd
Lakatos, L. L. (VA)

Bedford
Middleton, W. W. (A)

Bellefonte
Maley, E. S., Jr. (A)
Maloy, E. S. (A)
Mentzer, J. R. (A)

Bellevue
O'Shea, J. G. (M)

Berwyn
Phelan, L. T. (A)

Bethlehem
Baganz, A. (A)

Bloomsburg
Galbreath, J. R. (A)

Blue Bell
Brown, R. D., Jr. (VA)

Boothwyn Heights
Hersey, J. B. (A)

Braddock
Zygmunt, H. J. (A)

Bradford
Craumer, H. S. (A)
Francis, T. C. (VA)

Bridgeville
Williams, L. E. (A)

Brookville
Miller, R. C. (A)

Bryn Athyn
Simons, K. A. (VA)

Cameron
Mayberry, H. P. (A)

Camp Hill
Knerr, G. R. (A)

Carlisle
Gagne, L. A. (VA)

Carlton
O'Brien, F. E. (A)

Chester
Yetter, E. W. (M)

Clarendon
Walchli, H. E. (A)

Clarks Summit
Mack, D. W. (VA)

Clearfield
Bolton, S. W. (VA)
Curley, D. C. (M)
Diehl, W. F. (F)
Fulmer, J. R., Jr. (A)
Thomas, J. E. (A)

Coatesville
Willard, R. S. (A)

Cochranton
Smock, D. O. (A)

Collingdale
Shallcross, D. H. (A)

Connelsville
Gallo, J. M. (A)

Conshohocken
Guinan, J. J. (A)

Cynwyd
Sunstein, D. E. (M)

Darby
Rataski, C. P. (A)

Downingtown
Rappaport, H. (A)

Doylestown
Liebig, W. D. (A)
Moyer, L. K. (VA)

Dresher
Ellis, W. G. (SM)

Drexel Hill
Coffman, B. C. (A)
Dengate, C. D. (A)
Gleason, H. H. (SM)
Lewis, G. (VA)
Pitts, W. L. (M)
Sharples, A. R. (VA)
Warshaw, H. D. (A)

Dubois
Turconi, R. S. (A)

Duquesne
Murcek, S. J. (VA)

Easton
Schaefer, J. B. (SM)
Shaffer, V. B. (A)
Waer, R. R. (A)

East Pittsburgh
Chubb, L. W. (F)
Hanna, C. R. (SM)
Katz, L. (A)
Madsen, C. J. (SM)
McCoubrey, A. O. (A)
Osbon, W. O. (VA)
Slepian, J. (F)
Thornton, F., Jr. (A)
Wisleder, D. E. (A)

Elkins Park
Porter, H. F. (VA)
Richter, H. K. (A)

Emporium
Ackman, H. E. (SM)
Anspach, K. E. (A)
Baldwin, A. V. (SM)
Balog, M. (M)
Brunner, G. V. (M)
Campbell, V. H. (M)
Carlson, R. F. (M)
Catherman, E. E. (A)
Clark, J. H. (A)
Dalasta, F. (A)
Dickinson, W. A. (SM)
Doney, L. M. (A)
Forman, N. J. (A)
Gaenzle, J. B. (M)
Gessford, R. K. (SM)
Glantz, L. L. (A)
Goodell, E. M. (M)
Gore, J. K. (A)
Gunnell, G. T. (VA)
Haas, P. (VA)
Hauser, J. H. (A)
Iske, J. E. (A)
Jones, W. R. (SM)
Kahl, E. (M)
Kahl, M. I. (SM)
Kiser, N. L. (SM)
Klinestiver, G. H. (VA)
Knowles, D. J. (M)
Krahl, W. L. (SM)
Kromko, V. J. (A)
Lambert, R. L. (M)
Loughlin, J. H. (A)
McNaughton, R. A. (M)
Melzer, H. (VA)
Mobley, R. C. (A)
Ottemiller, W. H., Jr. (M)
Overmier, E. E. (M)
Palmateer, R. E. (VA)
Peterson, A. W. (M)
Pleak, H. C. (A)
Porsch, A. W. (M)
Reash, C. W. (M)
Reitz, N. J. (M)
Rishell, G. L. (M)
Robinson, A. J., Jr. (A)
Schultz, A. J. (A)
Slinkman, R. W. (A)
Smith, C. R. (SM)
Smith, D. R. (A)
Starek, R. A. (A)
Steen, J. R. (SM)
Wehmann, G. W. (A)
Weiss, W. A. (M)
Woodward, T. M., Jr. (M)
Zelt, R. J. (VA)

Erie
Bliley, F. D. (A)
Hestor, K. L. (A)
Johnson, J. E. (A)
Marthens, A. S. (M)
Minnium, B. B. (VA)
Raub, L. A. (VA)
Schlaudecker, R. T. (A)
Wolfskill, J. M. (A)

Farrell
Bracic, M. M. (A)

Feasterville
Schroeder, A. C. (A)

Flourtown
Ellsworth, W. C. (SM)
Stenzel, E. R. (A)

Fort Washington
Schantz, J. S. (VA)

Franklin
Martin, J. F. (A)

Glenside
Armstrong, D. E. (A)
Bamford, H. S. (A)
Hoagland, C. C. (A)
Jackson, R., Jr. (A)
Kleinhofer, B. A. (A)
Miller, A. C. (VA)
Pardee, S., Jr. (A)
Wilson, H. R. (A)

Grampian
Moore, W. R. (VA)

Greensburg
Stark, R. E. (VA)

Harrisburg
Drumheiser, A. W. (VA)
Dunlap, F. I. (A)
Miller, R. M. (A)
Peffer, R. M. (A)
Strouse, W. M. (A)
Wagner, R. W. (M)
Young, A. F. (A)

Hatboro
Browning, R. G. (A)
Butman, R. C. (A)
Noll, E. M. (A)

Haverford
Benham, T. A. (A)
Clapp, R. G. (SM)
Crawford, A. L., Jr. (M)

Hazleton
Luchi, R. D. (A)
Segaria, N. M. (A)

Hummels Wharf
Schlegel, H. G. (A)

Huntingdon Valley
Spielman, S. C. (SM)
Thompson, M. L. (SM)

Irwin
Brook, A. (A)

Jenkintown
Brauer, F. N. (A)
Clark, W. R. (VA)
Garretson, E. B. (A)
Hilliard, D. M. (A)

Johnstown
Jones, R. D. (A)
Kocsan, E. S. (A)

Kingston
Sakoski, C. (A)

Lancaster
Ayer, R. B. (SM)
Barrett, R. E. (A)
Boak, I. S. (M)
Burnett, C. E. (SM)
Cohen, A. A. (A)
Driver, J. P. (A)
Evans, H. J. (A)
Ewald, E. R. (A)
Feyerherm, M. P. (M)
Forman, J. M. (M)
Freund, W. H. (M)
Glover, A. M. (VA)
Gray, G. E. (A)
Haller, C. E. (SM)
Headrick, L. B. (SM)
Hirlinger, J. F. (SM)
Horrocks, S. W. (VA)
Horton, C. E. (A)
Hu, H. C. (A)
Kelar, J. (A)
Larson, R. W. (SM)
Love, R. G. (VA)
Malter, L. (SM)
Mathiot, J. E. (A)
Nekut, A. G. (M)
Pratt, G. W. (A)
Quinn, J. L., Jr. (A)
Richards, P. A. (A)
Seelen, H. R. (A)
Shekels, H. D. (A)
Smith, C. P. (M)
Spitzer, E. E. (SM)
Swedlund, L. E. (SM)
Taylor, P. H. (VA)
Torsch, C. E. (A)
Ulrey, D. (SM)
Vandegrift, R. B. (SM)
Wilcox, R. C. (A)
Wilhelm, J. F. (A)

Lansdale
Allen, J. E. (SM)
Goddard, R. C. (A)
Harcher, A. J. (A)
Lyle, A. E. (SM)

Lansdowne
Mayer, R. (M)
Moritz, C. (A)
Pamphilon, L. E. (A)

Leechburg
Boario, W. R. (A)

Lehighton
Walck, W. J. (A)

Lemoyne
Smiley, W. A. (VA)

Lewisburg
Bueffel, B. H., Jr. (A)
Kornetz, N. S. (VA)
Scheer, F. H. (VA)

Llanerch
Denk, W. E. (VA)

Lock Haven
Ayton, J. (M)
Bitner, H. W. (A)
Hartwell, H. G. (M)
Hoffman, E. J. (SM)
Laubacher, P. R. (A)
Palen, H. A. (M)
Rinn, F. H. (M)

Lynnport
Klingaman, G. W. (A)

Manoa
Eastlack, E. D. (A)

Meadowbrook
Walker, H. (VA)

McKeesport
McMillen, G. (VA)

Media
McCouch, G. P. (A)
Tompkins, H. E. (A)

Melrose Park
Sheppard, C. B. (M)

Merion
Colehower, C. H., Jr. (A)

Mill Hall
Cresswell, S. G. (M)
Schnering, C. J. (M)

Millvale
Popp, R. (A)

Minersville
Palasky, H. (A)

Montoursville
Heckman, E. M. (A)
Huber, J. L. (A)
Jordan, A. D. (M)
Margolis, S. (M)
Smithgall, H. E., Jr. (M)
Snyder, J. H. (A)

Muncy
Bertin, E. P. (A)

Narberth
Dilks, U. C. S. (M)
Forstall, E. L. (VA)
McCoy, C. T. (VA)
Williamson, J. F. (VA)

New Castle
Beck, K. H., Jr. (A)

Newfoundland
Decino, A. (SM)

New Freedom
Corse, W. F. (A)

New Holland
Holshouser, D. F. (M)

New Hope
Fireman, P. (A)

New Kensington
Harris, D. E. (A)

Newville
McElwain, J. L. (A)

Norristown
Anders, R. D. (A)
Gander, M. G. (A)
Place, S. W. (VA)
Rehrer, W. E. (A)
Zern, R. T. (VA)

North Hills
Kunz, J. G. (A)

Oreland
Thompson, E. O. (A)

Palmyra
Hampton, L. R. (A)

Paoli
Overmiller, C. M. (VA)

Penn Wynne
Capodanno, R. T. (M)

Philadelphia
Adams, M. B. (A)
Albee, C. M. (A)
Albee, M. M. (A)
Albright, R. B. (SM)
Alter, A. R. (A)
Ames, M. E., Jr. (M)
Antrim, D. M. (A)
Applegarth, A. R., Jr. (VA)
Auerbach, M. (A)
Austin, W. R. (A)
Ballou, H. A. (A)
Banks, J. (A)
Batchelder, R. T. (A)
Bean, N. S. (VA)
Bechler, W. C. (VA)
Bender, H. L. (A)
Benge, J. R. (VA)
Benjamin, J. M., Jr. (A)
Bennett, H. S. (SM)
Bennon, M. (A)
Benware, R. T. (A)
Bernbaum, B. (A)
Bertolet, E. C. (M)
Biberman, L. S. (A)
Biddle, H. A. (A)
Bingley, F. J. (SM)
Birdsall, R. W. (A)
Bittner, E. J. (A)
Block, E. (A)
Bonadies, V. J. (A)
Bond, C. F. (A)
Bowdon, F. M. (A)
Brainerd, J. G. (SM)
Breslow, A. J. (A)
Brothers, J. T. (SM)
Bryant, H. G., Jr. (A)
Buffington, A. P. (A)
Buggy, R. V. (A)
Bundy, R. F., Jr. (A)
Burgett, M. I., Jr. (A)
Burks, A. W. (M)
Busser, J. H. (A)
Caporale, P. (VA)
Chadwick, P. S. (A)
Chamberlin, N. K. (A)
Chambers, C. C. (SM)
Charp, S. (M)
Chedaker, J. (A)
Chen, T. C. (A)
Christiansen, W. G. (A)
Cianela, D. J. (A)
Colodny, S. H. (A)
Cooley, D. L. (A)
Craig, P. M. (SM)
Creamer, E. M., Jr. (A)
Crooks, W. R. (A)
Cummings, E. J. (A)
De Wolf, J. B. D., Jr. (A)
Diem, G. W. (M)
Dodge, F. R. (VA)
Dolberg, C. E. (A)
Duncan, R. D., Jr. (SM)
Dunn, J. C. (VA)
Earnshaw, D. P. (SM)
Eckert, J. F., Jr. (A)
Edmonds, R. H. (M)
Ehret, C. D. (F)
Ellis, I. M. (A)
Emerson, K. H. (SM)
Etkin, H. A. (VA)
Ferrell, O. P., Jr. (A)
Fisher, A. H. (A)
Fletcher, H. E. (A)
Flomenhoft, M. (A)
Florman, E. F. (A)
Forster, W. H. (A)
Fowler, C. J. (A)
Frank, N. E. (A)
Frear, W. (VA)
Freeland, E. C. (VA)
Frekot, J. J. (A)
Friedman, M. (A)
Gerlach, G. G. (VA)
Gilbert, W. E. (SM)
Gillette, K. G. (VA)
Gillies, J. H. (SM)
Glace, K. (M)
Godsho, A. P. (VA)
Gubin, S. (SM)
Haag, S. J. (A)
Hackett, J. P. (A)
Hadlock, C. K. (A)
Hagerty, G. E. (VA)
Haines, B. P. (A)
Haines, R. K. (M)
Halpern, R. L. (A)
Hamilton, S. (VA)
Hamm, N. G. (A)
Hammer, T. E. (A)
Hancock, J. W. (A)
Hartley, H. F., Jr. (A)
Hayward, J. W. (VA)
Hazeltine, A. V. (A)
Held, H. P. (A)
Held, W. J. (A)
Henninger, J. H. (M)
Hensley, E. B. (A)
Hervey, J. P. (VA)
Hieronymus, J. (A)
Himmer, F., Jr. (A)
Hoffer, H. N. (A)
Howard, W. A. (A)
Jacocks, T. B. (VA)
Jang, M. J. (A)
Johnson, N. (M)
Jones, W. A. (A)
Karker, A. S., Jr. (A)
Kinnier, D. (VA)
Kraus, C. R. (A)
Kraus, F. A. (A)
Kurdziel, J. F. (A)
Kyne, T. (A)
Langberg, E. L. (A)
Le Blang, E. D. (A)
Leitch, J. G. (SM)
Levy, W. W. (A)
Liebscher, A. (M)
Loginow, S. (A)
Long, M. L. (A)
Lovejoy, E. W. (SM)
Lowe, L. (A)
MacFadden, W. C. (VA)
Mackey, R. J., Jr. (A)
Marsten, J. (SM)
Matthews, A. C. (SM)
Mauchly, J. W. (A)
Mazur, D. G. (A)
McDowell, A. P., Jr. (VA)
McGinnis, S. E. (A)
McKinley, R., Jr. (A)
Miller, E. (A)
Montgomery, A. P. (VA)
Moore, R. C. (VA)
Mouradian, H. (VA)
Munsell, A. F. (A)
Munster, A. C. (A)
Murri, J. (A)
Myer, D. A. (SM)
Namaroff, J. H. (A)
Neill, W. E. (A)
Nelson, L. (A)
Neuber, H. K. (VA)
Newborg, D. S. (A)
Nicholson, G. D. (A)
Norton, R. (A)
Nygren, A. C. (A)
O'Donnell, J. A. (A)
Oliver, J. K. (A)
Packard, C. A. (VA)
Parnell, J. (A)
Payne, J. F., Jr. (VA)
Perlman, W. (A)
Petterson, W. N., Jr. (VA)
Pinter, P. J. (A)
Plotkin, M. (A)
Polster, N. E. (A)
Porter, V. J. (A)
Price, D. B. (A)
Pritchard, W. L. (A)
Purnell, G. W. (A)
Rabinowitz, M. W. (A)
Ranalli, M. J. (A)
Rawlins, E. F. (A)
Raymond, G. H. (M)
Roake, W. C. (M)
Robinson, H. A. (SM)
Rodgers, L. M. (M)
Rowe, C. R. (SM)
Sabaroff, S. (M)
Schachat, T. (A)
Scheiner, S. R. (A)
Scheirer, H. B. (A)
Scheneman, H. W. (A)
Schifreen, C. S. (A)
Schmitt, E. C. (A)
Schnitzer, B. E. (M)
Schulz, R. B. (A)
Scott, S. R. (A)
Seltzer, L. N. (A)
Shannon, F. J., Sr. (A)
Shaw, R. F. (M)
Sheldon, H. W. (A)
Showers, R. M. (A)
Silbert, D. T. (A)
Silverman, E. (A)
Smith, D. B. (SM)
Spector, E. N. (A)
Spencer, C. H. (A)
Stoddert, T. M. (A)
Stoller, M. D. (A)
Strenger, W. T. (M)
Strohlein, E. M. (A)
Stroman, C. F. (A)
Suckle, B. W. (A)
Tarpley, R. E. (VA)
Tarzian, V. (A)
Tellier, J. C. (SM)
Thomson, M. E. (A)
Tiley, J. W. (M)
Tilley, A. E. (M)
Tourshou, S. (A)
Tuska, C. D. (SM)
Updike, A. G. (A)
Vance, D. H. (VA)
Van Horn, J. C. (SM)
Voegtlin, E. (A)
Voelker, W. D. (M)
Vorperian, H. (A)
Waitkeneus, J. (A)
Wald, S. (A)
Walls, H. J. (SM)
Waterman, W. (VA)
Webb, D. T. (A)
Webb, G. N. (A)
Weise, R. C. (VA)
West, W. P. (SM)
Wightman, E. R. (A)
Wild, R. F. (VA)
Williams, A. J., Jr. (VA)
Wolin, S. (A)
Wood, H. O. (A)
Woodcock, V. E. (A)
Wyeth, F. H. (A)
Yanowitch, M. A. (A)
Yust, H. J. (A)
Zakowski, L. F. (A)
Zappacosta, J. A. (A)

Pine Grove Mills
Parsons, J. S. (A)

Pittsburgh
Alexander, F. C., Jr. (A)
Allen, J. G. (SM)
Barton, J. P. (VA)
Baudino, J. E. (VA)
Berninger, J. W. (A)
Blackmon, H. N. (M)
Bossart, P. N. (VA)
Boyer, J. L. (A)
Brannen, P. M. (A)
Brown, R. H. (A)
Busse, C. C. (A)
Canning, R. (A)
Carpenter, P. M. (A)
Caywood, W. P. (A)
Crooks, R. K. (SM)
Cummings, W. D. (A)
Dodd, A. E. (A)
Doucette, A. R. (A)
Gabler, R. T. (SM)
Goldbach, J. C. (A)
Goodboy, G. O. (VA)
Gorham, R. C. (VA)
Hague, H. J., Jr. (A)
Hall, C. T. (A)
Hutcheson, J. A. (SM)
Jarrett, M. G. (VA)
Jenkins, J. (A)
Kenney, T. C. (A)
Kleeb, G. F. (A)
Klotzbaugh, G. A. (A)
Knox, W. G. (A)
Kozub, L. J., Jr. (A)
Lawrence, C. (A)
Lazich, B. (SM)
Lockhart, W. K. (A)
Luther, G. M. (A)
Maas, W. C. (A)
Marcum, J. I. (A)
Marsteller, L. O. (M)
McDowell, J. M. (A)
Middlecoff, H. W. (A)
Miller, I. T. (A)
Miller, W. M. (VA)
Mundo, C. J. (A)
O'Donnell, T. J. (A)
Peters, L. J. (VA)
Place, W. P. (VA)
Redman, W. T. (A)
Reed, J. F., Jr. (A)
Rose, J. T. (A)
Schultz, J. J. (A)
Shafer, W. L. (A)
Shaw, S. J. (A)
Sheppard, G. E. (M)
Snefsky, E. A. (A)
Staubitz, E. J. (VA)
Sunnergren, A. P. (VA)
Teare, B. R., Jr. (SM)
Trautman, D. L., Jr. (A)
Volz, C. (A)
Walker, E. L., Jr. (A)
Williams, E. M. (SM)
Work, W. R. (A)
Wyckoff, R. D. (SM)

Pottstown
Mellon, R. E. P. (VA)

Quakertown
Bartholomew, R. G. (A)
Leibe, F. A. (VA)

Reading
Brobst, A. K. (A)
Fister, T. J. (A)
Hornberger, J. E. (VA)
Landis, H. O. (VA)
Liesman, F. J. (A)
Mills, C. A., Jr. (A)
Peterson, J. T. (A)

Renovo
Gerrity, J. J. (A)

Ridley Park
Spittle, S. E. (VA)
Ward, E. P. (A)
Weiss, E. (A)

Robesonia
Greenawalt, R. H. (A)

Rochester
Anderson, G. M. (A)

Rockledge
Hopwood, A. M., Jr. (VA)

Saint Marys
Abbott, H. W. (VA)
Andrews, L. D. (A)
Dressel, H. M. (A)
Frank, V. J. (A)
Herrick, G. G. (VA)
Hoffman, R. R. (SM)
Mc Knight, G. P. (M)
Pierson, I. S. (VA)
Schatz, E. R. (A)
Williams, H. A. (VA)

Sayre
Ward, S. A. (A)

Scranton
Cooke, K. R. (A)
Irving, I. M. (A)
Moore, F. B. (A)
Smith, O. J. M. (M)
Weiss, H. (A)
Witkowski, J. F. (VA)

Sellersville
Smith, H. B. (A)

Sharon
Biebesheimer, W. B. (A)
Sateren, M. G. (VA)
Heck, A. C. (A)
Oulton, G. R. (A)

Sinnamahoning
Faust, A. C. (A)

Slippery Rock
McClymonds, C. C. (A)

Smethport
Biever, F. H. (VA)

Somerset
Wagner, W. W. (A)

South Williamsport
Sullivan, F. R. (A)

Spring City
Wynn, J. C. (VA)

Springfield
Merrill, H. B., Jr. (A)

State College
Butz, A. N., Jr. (M)
Crossley, G. L. (SM)
Ebaugh, P. (A)
Hall, F. T., Jr. (M)
Iffland, J. J. (A)
Martin, W. R. (A)
Newburgh, H. (A)
Reitz, J. R. (A)
Salzman, C. F. (A)
Waynick, A. H. (A)

Summerdale
Neidig, D. F. (A)

Sunbury
Bartley, F. L. (A)
Greis, W. K. (VA)
Hooten, H. D. (A)
Johnston, E. L. (A)
Karlson, A. T. (A)
Keller, J. W., Jr. (A)
Schaefer, H. W., (A)
Tressler, R. R. (A)

Swarthmore
Bradley, W. E. (SM)
Felton, W. W. (M)
Murakami, T. (A)
Weisz, P. (A)

Swissvale
Bechtol, H. D. (M)
Freeman, K. L. (VA)

Towanda
Owen, E. R. (A)

Tyrone
Kearney, H. B., Jr. (VA)

Uniontown
Coleman, J. F. (A)

Upper Darby
Airston, A. J. (VA)
Barbiere, J. F. (A)
Campbell, C. C. (A)
Carroll, E. A. (A)
Edwards, C. L. (A)
Johnson, W. H., Jr. (A)
Keil, O. C., Jr. (M)
Marsden, W. Y. (A)
Moll, C. R. (A)
Newell, A. J. (A)
Powell, F. S. (A)
Segal, B. (A)
Seitz, F. R. (VA)
Sohon, H. (VA)
Woll, C. F. (VA)

Verona
Muffly, G. (VA)
Zierdt, C. H. (A)

Warren
Johnson, H. D. (M)

Warrington
Beggs, G. E., Jr. (M)
Clarance, A. L. (VA)

Washington
Colosi, A. (A)
Spriggs, L. A., Jr. (A)

Wayne
Bard, E. (A)

Weatherly
Kauders, R. M. (A)

West Manayunk
Chace, W. G. (A)

Wilkinsburg
Berger, H. P. (A)
Gilbert, C. W. (A)
Mag, A. (VA)
Miller, J. H. (A)
Taylor, W. E., Jr. (A)

Williamsport
Anderson, K. B. (A)
Barto, D. L. (A)
Bennett, S. R. (M)
Boudon, A. (A)
Breon, K. H. (A)
Bresee, W. H. (A)
Burroughs, F. L. (M)
Eckel, C. B. (M)
Freeman, W. C., Jr. (M)
Goldsmith, O. B. (A)
Graham, V. M. (F)
Hall, C. H., Jr. (A)
Hannahs, W. H. (A)
Harrington, R. A. (A)
Herman, C. L. (A)
Jones, G. S. (A)
Keen, A. W. (SM)
Knudson, L. I. (A)
Lepley, R. C. (A)
Longacre, H. C. M. (M)
Lovett, W. S. (M)
Mahaffey, G. N. (VA)
Miles, J. G. (A)
Miller, H. M. (A)
Mueller, W. P. (M)
Nordseth, M. P. (A)
Ostrander, G. D. (M)
Persio, L. N. (VA)
Petts, R. G. (M)
Ratchford, H. L. (VA)
Seidner, J. H. (M)
Shope, C. E. (A)
Space, C. (A)
Vergason, D. L. (A)
Wasson, J. W. (A)
Weissman, J. G. (A)
Wellendorf, J. J. (M)
Winner, A. N. (A)

Willow Grove
Bowley, R. J. (VA)
Gelardi, M. (VA)
Summerlin, W. O. (A)

Wynnewood
Bucher, T. T. N. (A)
Dohan, W. R. (VA)
Palmer, G., Jr. (A)
Prichard, J. S. (A)

York
Beatty, R. W. (A)
Gise, F. G. (A)
Goodling, G. G., Jr. (VA)
Lever, P. R. E. (VA)
Rehrig, N. W. (A)
Tuten, B. L. (A)
Weaver, W. N. (A)

RHODE ISLAND

Apponaug
Bargamian, J. (A)
Green, S. (A)

Cranston
Barrett, A. G. (A)
Westbom, A. C. (A)

Howard
Baptiste, G. F. (A)

Middletown
Curran, B. F. (A)

Newport
Brooks, G. W. (VA)
Ellis, A. T. (A)
Sproul, S. (A)

Pawtucket
Thornley, H. W. (VA)

Providence
Burton, B. L. (A)
Dandreta, W. (VA)
Farrell, F. X. (A)
Tilley, H. H. (A)

Quonset Point
Alman, J. E. (A)
Cole, N. D. (VA)
Ruhsenberger, J. R. (VA)
Wells, M. T. (A)

Rumford
Parker, G. I. (A)

Warren
Bowen, H. C. (A)

Warwick Neck
Boss, L. J. (A)

Woonsocket
Aymar, E. (VA)
Donneau, P. J. (A)
Teachman, A. E. (VA)

SOUTH CAROLINA

Abbeville
Hawthorne, C. T. (A)

Charleston
Newman, H. L. (A)
Schachte, W. L. (A)
Thibodeau, J. E. (A)
Tyler, R. S. (A)
Yasinsac, A. (A)

Clemson
Klein, N. E. (VA)
Tingley, F. T. (A)

Columbia
Dominick, J. B. (A)
Easley, R. L. (M)
Hafely, C. H. (A)
Lambert, R. D., Jr. (M)
Mayer, I. S. (VA)
Mikell, W. G. (A)
Williams, C. K. (A)

Conway
Hanks, H. L. (A)

Florence
Finklea, J. D. (A)
Hudson, C. O. (A)

Greenville
Pace, M. W. (A)

Lake City
Diggs, G. C. (A)

North Augusta
Aderhold, H. J. (A)

North Charleston
Dickinson, W. T. (A)

Taylors
Barton, L. M. (A)

West Columbia
Thoman, C. A. (A)

SOUTH DAKOTA

Aberdeen
Muth, F. A. (A)
Webster, C. J. (A)

Astoria
Hogie, W. I. (A)

Brookings
Crothers, M. H. (A)

Lead
Kirby, R. C. (A)

Pierre
Craig, R. B. (VA)

Salem
Cheadle, J. N. (A)

Sioux Falls
Campbell, J. K. (A)
Kerl, R. C. (A)
McKenna, W. E. (M)
Weir, E. J. (A)
West, H. L. (A)

Vermillion
Bedwell, T. H. (A)

Yankton
Todd, C. M. (VA)

TENNESSEE

Chattanooga
Barnes, B. B. (A)
Bennington, R. F. (VA)
Freeman, H. L. (A)
Jones, E. D. (A)
Munson, L. J. (M)
Talmage, T. D. (M)
Thurnauer, H. (VA)

Clarksville
Taylor, D. A. (A)

Fountain City
Ramler, W. J. (A)

Gallatin
Jones, E. F., Jr. (A)

Harriman
Humphrey, A. J. (A)

Jackson
Walker, C. A., Sr. (A)

Johnson City
Garland, O. K. (A)

Kingsport
Devaney, R. G. (A)
Nelson, R. E. (A)

Knoxville
Adcock, S. E. (VA)
Hardin, R. O. (A)
Reyling, P. M. (M)
Shipley, E. D. (A)

Maryville
Smith, B., Jr. (A)
Warren, M., Jr. (A)

Memphis
Dowler, R. B. (A)
Logan, E. W., Jr. (A)
Schauers, C. J. (A)
Slavick, H. W. (VA)

Nashville
Archie, A. N. (A)
Campbell, J. S. (M)
Clark, J. H. (A)
Hill, W. A., Jr. (A)
May, A. J. (A)
Montgomery, L. H. (A)
Reynolds, G. A. (M)
Schumann, F. (SM)
Shelton, A. C. (M)
Wright, B. W., Jr. (A)
Wynne, E. O. (A)

North Chattanooga
Swingle, T. M. (A)

Oak Ridge
Abele, H. M., Jr. (A)
Anthony, L. L., Jr. (A)
Aristei, J. (A)
Devaney, R. G. (A)
Drukey, D. L. (A)
Fort, W. G. S. (A)
Hanson, M. L. (A)
Henley, R. D. (A)
Hochgesang, C. F. (A)
Janney, D. B. (A)
Leland, W. T. (A)
Palmer, R. C. (A)
Schuster, W. A. (A)
Senatore, S. J. (A)
Thompson, D. C. (A)
Thompson, M. I. (A)
Threadgill, A. R. (A)
Williamson, T. L. R. (A)

Savannah
Berry, J. S. (A)

Signal Mountain
Olmsted, J. M. (A)

Sparta
Haston, C. W. (A)

TEXAS

Abilene
Cherry, L. B. (A)
Hale, C. R. (A)

Alvarado
Benkley, F. G. (A)

Amarillo
Beasley, R. R. (A)
Belles, H. W. (A)
Hankison, W. C. (A)
Harris, H. W. (A)
Lipscomb, E. W. (A)
Martin, J. L. (A)
Torrey, W. H. (A)

Arlington
Boyle, K. R. (A)
Doan, L. W. (A)

Austin
Barclay, J. N. (A)
Brooks, F. E., Jr. (A)
Earhart, C. E. (A)
Greenwood, H. M. (A)
Hamlin, E. W. (A)
Hargis, P. M. (VA)
Kreuz, L. B. (A)
Maguire, J. C. (A)
Radcliffe, J. C. (A)
Seay, J. L. (A)

Baytown
Cornelius, L. W. (VA)

Beaumont
Bush, C. R. (VA)
Clyne, W. E. (VA)
Millington, J. W. (A)
Winterhalter, A. C. (A)

Big Spring
Walton, H. T. (A)

Bowie
Hamilton, R. H. (A)

Brenham
Buchanan, J. P., Jr. (A)

Brownsville
Crosby, R. C. (A)

Brownwood
Stewart, A. W. (A)

Canton
Hogue, W. T. (A)

Carrollton
Easterwood, M. J., Jr. (A)

College Station
Dillingham, H. C. (VA)
Hallmark, G. D. (A)
Huebner, G. L., Jr. (A)

Cooper
McKinney, C. M., Jr. (A)

Corpus Christi
Bishop, J. C., Jr. (A)
Bretzin, V. B. (A)
Clarke, W. L. (A)
Cox, W. W. (A)
Cuesta, N., Jr. (VA)
Douglas, R. N. (A)
Dunn, E. C. (A)
Kriz, W. (A)
Lockhart, H. B. (A)
Loeb, L. S. (A)
Newberry, D. A. (M)

Dalhart
Stout, J. E. (A)

Dallas
Bowler, G. E. (M)
Bresenham, J. J., Jr. (A)
Broding, R. A. (M)
Chapman, A. B. (VA)
Chenault, H. P. (A)
Collins, R. (A)
Congdon, R. L. (A)
Cook, H. A. (A)
Coursey, J. R. (A)
Cullum, A. E., Jr. (SM)
Daniell, C. M. (SM)
Dillon, F. O. (A)
Douglas, J. H. (A)
Elliott, T. A. (M)
Flynn, R. M. (SM)
Frauman, M. (A)
Godbey, J. J. (A)
Hallenstein, N. A. (VA)
Harrison, L. E. (A)
Hemphill, W. B. (A)
Hill, J. O. (VA)
Honeycutt, B. B. (A)
Kantenberger, W. J. (A)
Kauhl, C. J. (A)
Kennedy, F. H., Jr. (A)
Levelle, A. S. (M)
Loper, G. B. (M)
Lynn, P. R. (A)
Mathis, J. D. (SM)
Maund, C. A. (A)
May, L. W., Jr. (A)
McConathy, W. J. (A)
McDermott, E. (VA)
McNeely, J. S. (M)
Miller, E. (A)
Minton, J. P. (F)
Mitchell, W. R. (VA)
Moseley, T. B. (A)
Newell, B. J. (A)
Newton, W. W. (VA)
Paslay, L. C. (VA)
Penn, W. D. (VA)
Peterson, D. A. (SM)
Renner, D. S. (VA)
Ross, C. C. (VA)
Rountree, J. G. (M)
Royall, J. N. (A)
Royalty, J. (A)
Saxon, M. (M)
Schley, W. H. (A)
Sellers, J. E. (A)
Shook, E. M. (A)
Sorkin, S. A. (A)
Sowell, L. R. (A)
Stanton, A. N. (M)
Todd, C. A. (A)
Tucker, D. J. (SM)
Walden, O. A. (A)
Witty, W. M. (VA)
Zeidlik, W. J. (VA)

Denton
Taylor, T. W. (A)

El Paso
Branch, W. E. (SM)
Deakins, G. E. (A)
Gemoets, E. L. (VA)
Goodman, D. H. (A)
Safford, E. L., Jr. (A)
Stiles, A. C., Jr. (A)
Stuart, J. F. (A)
Talbott, E. P. (VA)

Fort Bliss
Fernald, A. E. (A)
Whiting, S. V. (A)

Fort Sam Houston
Egan, W. G. (A)

Fort Worth
Aiken, E. W. (A)
Applegate, H. E. (VA)
Barritt, N. F. (M)
Bunday, D. L. (A)

Conway, B. B. (A)
Currie, W. O. (VA)
Edwards, T. J. (A)
Frank, N. B. (M)
Gunn, C. J. (A)
Kimzey, T. I. (M)
Koski, J. I. (A)
Lindsey, W. F. (A)
Lorenzen, B. (A)
Ott, J. H. (A)
Palmer, J. (VA)
Rea, R. W. (A)
Richard, C. W. (SM)
Smerke, F. P. (A)
Sullivan, J. R. (VA)
Sylvester, G. E. (A)
White, J. C. (A)

Freeport
Coker, S. G. (A)

Gainesville
Culp, H. R. (A)

Galveston
Holaday, D. F. (A)
Lee, J. L. (A)
McCabe, L. L. (SM)

Garland
Talley, J. P., Jr. (A)

Goose Creek
Hiner, T. L. (A)

Gorman
Eison, L. R. (A)

Grand Prairie
Clyce, T. E. (A)

Grapeland
Whitaker, T. N. (A)

Grapevine
Barnes, P. C. (M)

Houston
Aiken, C. B. (SM)
Austin, F. M. (SM)
Bodin, J. A. (A)
Caplan, R. S. (VA)
Chinski, G. R. (A)
Doll, H. G. (SM)
Dupree, E. M. (SM)
Gardner, D. H. (VA)
Houston, C. E. (M)
Huston, O. H. (VA)
Kannenstine, F. M. (VA)
Kelley, E. K. (A)
Martin, S. A., Jr. (A)
McConnell, H. E. (VA)
McIntosh, J. L. (A)
Miles, H. L. (A)
Miller, G. K. (VA)
Neuenschwander, E. F. (A)
Neuman, L. J. (A)
Parker, R. H. (A)
Plumb, P. E. (A)
Quade, H. G. (A)
Robinson, K. H. (A)
Sears, G. D. (A)
Seay, P. A. (A)
Sellers, P. T. (A)
Terrell, N. J., Jr. (A)
Tvedt, T. J. (A)
Wheeler, H. T. (M)
Wischmeyer, C. R. (M)

Humble
Collins, E. N., Jr. (A)

Kelly Field
Curtis, D. L. (A)
Maloney, T. E. (A)

Kingsville
Ashenden, G. K., Jr. (A)

La Porte
Beardsley, W. S. (A)

Laredo
Fenner, J. J. (A)
Ingling, T. M. (A)

Longview
Curtis, J. R. (A)
Webb, E. E. (A)

Lubbock
Bryant, R. S. (A)
Hewett, R. C. (VA)
Litton, F. (A)
Soucy, H. A. (A)

Malakoff
Oster, R. E. (A)

Mertens
Buie, J. G. (A)

Mesquite
Ming, M. M. (M)

Mexia
Prickett, T., Jr. (A)

Nacogdoches
Townsley, F. W., (VA)

Ozona
Richards, D. C. (A)

Palestine
Hutcheson, G. C. (SM)
McReynolds, Z. A. (A)

Port Arthur
Miller, A. F. (M)

Quinlan
Easterwood, D. F. (A)

San Angelo
Ragsdale, M. M. (A)

San Antonio
Arnold, J. B. (A)
Brady, C. L. (A)
Dupree, J. E. (VA)
Egerton, W. G. (VA)
Fitzhugh, J. V. (A)
Garren, R. A. (A)
Hallam, J. T. (VA)
Imle, J. F. (VA)
Jeffers, C. L. (VA)
Meiners, W. H. (A)
Parr, J. O. (A)
Stahl, J. (A)
Vaughan, S. G. (A)
Wall, L. D. (VA)

San Benito
Graver, F. E. (A)

Sheppard Field
Foy, C. A. (A)

Temple
Converse, L. B. (A)

Terrell
Pitts, M. L. (A)

Texarkana
Gallagher, L. C. (A)

Tyler
Wileman, R. A. (M)

Vernon
Diggs, B. H. (A)
Wright, H. E. (A)

Victoria
Scroggins, C. M. (A)
Sherry, F. E., Jr. (A)

Waco
Appleman, L. H. (VA)
Sanderford, R. M., Jr. (A)

Wichita Falls
Adams, J. (VA)
Chatterton, E. G. (A)
Moates, O. E. (A)
Wiley, H. T. (A)

Woodsboro
Haertig, M. M. (A)

Yorktown
Respondek, A. M. (A)

UTAH

Garland
Burton, E. B. (A)

Midvale
Atwood, K. W. (A)

Ogden
Cozzens, W. D. (VA)
Jeffers, L. M., Jr. (A)
Wilson, J. H. (A)

Salina
Osborn, R. H. (A)

Salt Lake City
Baldwin, J. M. (SM)
Benson, S. (A)
Carman, F. C. (A)
Dolva, V. A. (A)
Edmonds, S. C. (A)
Evans, C. R. (M)
Fuqua, C. E. (A)
Gardner, M. S. (A)
Haycock, O. C. (A)
Pack, E. G. (M)
Quate, C. F. (A)
Wahlquist, L. O. (A)
Watts, G. J. (A)

Sandy City
De Remer, C. W. (SM)

Wendover Field
Walker, H. E. (A)

Woods Cross
Bartholomew, D. (A)

VERMONT

Northfield
Howes, D. E. (VA)

Rutland
Lyman, R. P. (SM)

Saint Johnsbury
Smith, H. J. (A)

VIRGINIA

Alexandria
Adams, I. D. (A)
Bailey, B. L. (A)
Brinkman, H. A. (A)
Clements, S. E. (VA)
Dau, W. K., Jr. (A)
Dowie, J. A. (SM)
Gillett, G. D. (F)
Greenleaf, S. A. (VA)
Haddock, F. T., Jr. (A)
Hayes, R. S. (VA)
Hoover, M. V. (A)
Hopkinson, T. W. (M)
Howe, W. E. W. (A)
Hurd, E. L., Jr. (A)
Kaserman, F. S. (VA)
Kaufmann, H. W. (A)
Kinley, C. B. (VA)
Lain, P. A. (A)
Lewis, O. I. (SM)
Lyon, J. A. M. (A)
McCachren, W. S. (M)
Moffett, L. (VA)
Myers, J. C. (A)
Packard, A. C. (VA)
Peake, H. J. (M)
Pickard, R. W. (A)
Ringo, G. R. (A)
Sloughter, G. S. (A)
Strothers, H. (A)
Stuckert, E. M. (VA)
Thompson, J. F. (A)
Waters, J. S. (VA)
Williams, J. A. (A)
Winter, H. (A)

Appomattox
Godsey, M. S. (A)

Arlington
Allen, H. E. (SM)
Bagnall, V. B. (SM)
Banks, C. R. (VA)
Blackman, C. P. (A)
Brimberg, M. M. (VA)
Buchanan, O. R. (VA)
Campbell, W. H. (SM)
Clark, R. L. (VA)
Clements, C. C. (A)
Cogswell, W. P. (VA)
Coombs, W. C. (VA)
Dowers, A. A. (VA)
Dutton, W. P. (A)
Fahy, E. J. (A)
Fitch, J. A. (M)
Fox, P. E. (A)
Gautney, G. E. (A)
Goldwag, H. (A)
Griffith, M. H. (VA)
Guest, W. T. (VA)
Guthrie, H. G. (A)
Hauber, E. N. (M)
Herbstreit, J. W. (SM)
Hungerford, E. A., Jr. (A)
Hunt, J. T. (A)
Hurley, H. C. (A)
Jackson, C. H. (A)
Jett, C. O. (A)
Johnson, E. M. (M)
Kelleher, J. J. (A)
Kilpatrick, E. L. (A)
Krcek, J. A. (A)
Lair, J. R. (VA)
Landis, P. E. (A)
Lee, J. M. (VA)
Martin, R. D. (A)
McClenon, D. (A)
Mitchell, D. H. (A)
Moffat, W. H. (VA)
Montgomery, J. N. (A)
Moran, W. M. (A)
Morris, R. M. (SM)
Moulton, R. D. (A)
Padgett, G. E. (A)
Peckham, M. A. (VA)
Piore, E. R. (SM)
Prehn, L. D. (M)
Preston, J. G. (VA)
Price, M. A. (VA)
Renton, R. J. (M)
Riblet, H. B. (SM)
Rosen, L. (A)
Rothrock, H. B. (VA)
Schaaf, R. H. (VA)
Sharpe, M. O. (SM)
Shook, W. R. (A)
Shostak, A. A. (M)
Small, J. N. (A)
Smith, C. H., Jr. (A)
Smith, C. A. (A)
Smith, K. A. H. (A)
Smith, W. W. (A)
Spies, M. C. (VA)
Stephan, H. W. (VA)
Stewart, T. E. (A)
Stokes, H. S. (VA)
Stone, C. H. (SM)
Taylor, R. S. (A)
Thompson, L., Jr. (M)
Thompson, D. (A)
Thorp, W. E. (A)
Turner, J. S. (A)
Van Horn, J. E. (A)
Whitehouse, J. E. (SM)
Wickenkamp, F. W. (A)
Wilcox, S. W. (A)
Wolfand, D. (A)
Woodyard, H. R. (A)
Zaslavsky, S. (A)

Bedford
Lindsay, J. C. (A)

Blacksburg
Dickey, D. W. (A)
Murray, W. A. (VA)
Wright, R. R. (M)

Charlottesville
Breazeale, W. M. (SM)
Faulkner, W. H., Jr. (A)
Greig, J. H. (A)
Winchester, D. S. (A)

Dayton
Revercomb, H. E. (A)

Fairlington
Hansen, H. M. (A)
Tellman, H. A. (M)

Falls Church
Bateman, R. (A)
Beach, A. R. (SM)
Bond, C. H. (SM)
Burton, R. R. (A)
Chew, W. H. (A)
Field, F. M. (A)
Fisher, W. P. (VA)
Hunton, W. F. (A)
Lippincott, D. K. (SM)
McCurdy, R. G. (VA)
McDowell, R. B. (VA)
Miles, P. D. (SM)
Norman, S. W. (M)
Peters, M. K. (A)
Richman, H. R. (A)
Rumble, A. R. (VA)
Skrivseth, A. G. (M)

Farmville
Covington, O. C. (A)

Fort Belvoir
Palik, F. (VA)

Fort Myer
Henning, R. W. (A)

Galax
Weaver, D. W., Jr. (A)

Hamilton
Bouchey, S. H. (A)

Hampton
Aylor, R. P., Jr. (VA)
Bell, M. B. (A)
Kenimer, R. L. (A)
Minalga, G. P. (A)
Newby, D. H. (A)
Taylor, C. A. (A)
Truszynski, G. M. (A)

Harrisonburg
Braun, W. L. (A)

Herndon
Peck, R. C. (A)

Hilton Village
Stiles, R. G. (A)

Langley Field
Forbes, A. C. (SM)

Lexington
Horne, R. C. (A)

London Bridge
Boland, J. N. (VA)

Lynchburg
Orth, J. T. (A)

Manassas
Cortright, R. D. (A)
Marshall, E. L. (VA)

Marion
Millard, C. O. (A)

McLean
Creutz, J. R. (VA)

Monterey
Jones, R. C., Jr. (A)

Newport News
Burlock, J. (A)
Marshall, F. M. (A)
Reese, J. S. (A)
Wilson, C. C. (M)

Norfolk
Bailey, K. D. (A)
Bailey, S. O. (A)
Birnbaum, G. (A)
Breeden, A. P., Jr. (A)
Cooper, R. A. (A)
Dickerson, B. C. (A)
Diverty, J. W. (A)
Grether, J. L. (VA)
Howard, E. G. (A)
Jewell, E. D. (A)
Lizotte, O. A. (A)
Szetela, F. E. (A)

Petersburg
Townes, W. D. (A)

Portsmouth
Bloom, T. (A)
Clair, F. F. (A)
Friel, F. J., Jr. (VA)
Gwaltney, H. G. (A)
Hash, E. F. (A)
Joseph, H. M. (A)
Kitchin, H. W. (SM)
Koehler, E. F. (A)
Shepherd, J. F. (A)
Williams, R. E. (A)

Proffit
Quarles, L. R. (SM)

Richmond
Bailey, R. C. (M)
Chezik, T. W. (A)
Conte, T. M. (A)
Eubank, R. N. (M)
Franck, F. O. (A)
Golding, R. M. (A)
Kyle, J. W. (A)
Lee, W. M. (A)
Payne, J. E., Jr. (A)
Raabe, R. W. (A)
Sharpe, W. J. (A)
Wood, W. H. (A)
Woods, D. C. (VA)

Roanoke
Lemon, E. B. (A)
Morgan, C. W. (A)
Robertson, J. W. (A)

Stanley
Grimm, R. E. (A)

WASHINGTON

Aberdeen
Haase, W. D. (A)

Auburn
Strange, E. M. (M)

Bellingham
Leach, P. C. (A)

Bremerton
Adler, B. (A)
Baird, J. M. (A)
Blickensderfer, J. A. (A)
Brudwig, A. H. (M)
Crane, W. K. (A)
Daggett, L. L. (A)
Fouts, J. L. (A)
Graff, G. M. (A)
Gruwell, F. N. (M)
Hassell, P. A. (A)
Haugen, A. U. (A)
Himoe, C. E. (M)
Huddleston, R. E. (A)
Kellar, J. B. (A)
Kitt, D. (A)
Krenzke, P. A. (A)
Krieger, H. (A)
Lewis, C. (M)
Marsolan, V. C. (SM)
Mason, J. E. (M)
McVea, N. C. (A)
Murty, E. H. (A)
Norman, H. P. (A)
Pascual, R. A. (A)
Pitts, H. L. (SM)
Purbaugh, H. O. (A)
Rankin, S. J. (A)

Schmitt, G. W. (A)
Tewell, R. H. (A)
Thompson, R. R. (M)
Williams, G. T. (A)

Centralia
Templeman, J. M. (A)
Unsworth, R. G. (A)

Chehalis
Mills, B. C. (A)

Chelan
Stratton, D. A. (A)

Cle Elum
Weber, B. W. (A)

College Place
Kretschmar, G. G. (VA)

Edmonds
Farr, W. (A)

Ellensburg
Johnson, W. H. (A)

Everett
Finch, H. D. (A)
Gerdon, E. J. (A)
Hall, T. S. (A)
Mason, L. D. (A)

Kent
Powers, A. B. (M)

Kirkland
Lind, D. A. (A)

Lyle
James, S. D. (A)

Manette
Rybon, J. C. (A)

Marysville
Bartlett, D. S. (A)

Olympia
Gammell, H. C. (A)
Quantz, R. G. (A)

Pinehurst
Jacobsen, L. H. (A)

Port Blakely
Blair, A. R. (A)

Poulsbo
Winter, B. J. (A)

Puget Sound
Alexander, J. A. (A)

Pullman
Lickey, H. F. (VA)

Puyallup
Faris, J. J. (A)
Meehan, R. L. (A)

Quinault
Streater, A. L. (A)

Renton
Anderson, B. C. (A)

Retsil
Frey, L. E. (A)

Ritzville
Bush, B. E., Jr. (A)

Roslyn
Giovanini, F. (VA)

Seattle
Allen, J. J. (A)
Allen, J. W. (A)
Arnold, N. E. (A)
Ascione, R. (A)
Ashleman, F. C. (A)
Auckland, H. G. (M)
Bach, R. O. (SM)
Baker, S. E., Jr. (A)
Ballinger, L. (A)
Barger, G. K. (A)
Bark, R. S. (A)
Becker, R. A. (M)
Bemis, M. M. (A)
Bennett, S. D. (A)
Benzon, C. G. (VA)
Bernard, J. D. (A)
Bertram, S. (VA)
Black, J. C. (A)
Brott, F. J. (SM)
Brown, D. R. (A)
Brown, W. T. (A)
Buccione, V. S. (A)
Byer, E. D. (M)
Cadwallader, R. W., Jr. (A)
Caproni, G. A. (A)
Chase, R. F. (A)
Cochran, L. B. (SM)
Davis, E. D. (A)
Downie, W. A. (A)
Duncan, J. A. (A)
Eastman, A. V. (F)
Ellerbeck, K. H. (VA)
Ellis, A. R. (A)
Ellis, C. W. (A)
Eng, D. Y. (A)
Ernst, J. P. (A)
Eslinger, R. L. (A)
Estes, F. B. (VA)
Field, W. A. (A)
Fisch, O. (A)
Fletcher, E. S. (SM)
Flock, W. L. (A)
Foster, C. H. (A)
Foster, N. H. (VA)
Frost, F. N. (M)
Frost, J. D. (A)
Geisert, W. O. (A)
Gowdey, M. V. (M)
Grantham, M. D. (A)
Hagler, D. L. (A)
Hale, H. (A)
Hall, T. C. (M)
Harman, A. R. (A)
Harper, E. E. (A)
Harrell, B. F. (A)
Harrold, W. T. (A)
Hatfield, J. B. (A)
Herndon, L. C. (SM)
Hill, W. R., Jr. (M)
Hoard, G. L. (SM)
Hogg, J. E. (A)
Howell, H. H. (A)
Howlett, J. E. (A)
Illman, R. W. (A)
Johnson, J. F. (SM)
Kistler, R. E. (VA)
Klein, E. L. (A)
Lapham, R. R. (A)
Layton, J. E. (A)
Lee, I. W., Jr. (A)
Lee, R. C. (A)
Leighton, R. M. (A)
Libby, T. M. (SM)
Lind, P. C. (A)
Linkletter, R. L. (A)
Loughridge, D. H. (SM)
Lowe, G. P. (A)
Malling, L. R. (VA)
Manning, R. G. (A)
Marchant, I. G. (M)
McClain, H. C. (A)
Mendenhall, G. G. (M)
Monk, K. R. (A)
Moore, H. A. (A)
Morse, R. L. (A)
Mossman, F. B. (SM)
Muehe, C. E., Jr. (A)
Murdock, M. J. (A)
Newton, W. L. (A)
Nunner, R. J. (M)
Ostrom, C. W. (A)
Palmer, V. L. (M)
Paterson, J. M. (M)
Payne, H. A. (A)
Peavey, E. A. (A)
Preston, J. L. (SM)
Price, H. J. (SM)
Rehkopf, C. L. (A)
Renfro, H. E. (VA)
Rickett, R. J. (A)
Rommel, T. A. (A)
Rost, E. J. (VA)
Shepard, W. G. (A)
Sheppard, J. J. (A)
Shipek, R. H. (A)
Smedstad, H. M. (A)
Smith, E. H. (M)
Snapp, P. W. (A)
Stedman, C. K. (SM)
Steinback, E. A. (A)
Stimson, F. F. (A)
Stinson, J. F. (A)
Swarm, H. M. (M)
Taylor, P. G. (M)
Temple, P. E. (A)
Tolmie, J. R. (SM)
Traub, L. A. (M)
Triplett, W. R. (A)
Van Doeren, C. A. (VA)
Wakelee, C. L. (A)
Ward, D. M. (A)
Warrick, H. H. (M)
Washburn, H. H. (A)
Wayer, C. F., Jr. (A)
Weinstein, G. (A)
Wells, J. (A)
Wendel, P. T. (A)
Williams, C. E. (SM)
Williams, C. S. (A)
Willman, K. M. (A)
Willson, A. R. (SM)
Young, J. A., Jr. (A)

Snohomish
Wilcox, R. E. (A)

South Bellingham
Lines, S. R. (VA)

Southworth
Jobe, D. J. (A)

Spokane
Backman, J. A. (A)
Eden, E. E. (A)
Evans, C. W. (A)
Gorman, D. P. (M)
Green, W. L. (A)
Kern, A. W. (A)
Lindberg, B. G. (A)
Mac Lean, T. W. (VA)
McCann, F. H. (A)
McGoldrick, J. P., II (A)
Palmquist, M. L., Jr. (A)
Pool, W. G. (A)
Prince, F. W. (A)
Sparling, A. G. (SM)
Storms, H. J. (VA)
Switzer, W. H. (A)

Takoma
Engh, D. F. (A)
Fisher, R. C. (VA)
Ludwig, R. I. (A)
McDonough, D. M. (A)
Miller, W. B. (A)
Perkins, M. G. (A)

Vancouver
Houston, C. M. (A)
McCready, S. W. (A)

Walla Walla
Hudgins, W. D. (A)
Parmelee, W. G., Jr. (A)
Sisk, J. J. (A)

Yakima
Graves, J. M. (A)
Kissler, R. G. (A)

WEST VIRGINIA

Beverly
Barlow, A. D. (A)

Bluefield
Flanagan, P. T. (A)

Bruceton Mills
Bryson, R. W. (A)

Fairmont
Fruehan, H. L. (A)
Wimpy, E. K. (A)

Huntington
Bromley, R. A. (A)
Schoew, F. L., II (A)
Webb, H. E., Jr. (A)

Kenova
Workman, G. D. (A)

Morgantown
Colwell, R. C. (SM)
Seibert, C. B. (A)
Spence, R. C. (A)

Moundsville
Jones, J. W. (A)

Oak Hill
Burke, J. T. (A)

Parkersburg
Napier, J. B. (A)

South Charleston
Andrews, R. W. (VA)
Ernst, A. A. (A)
Van Sleen, R. (A)
Zaharis, G. (A)

Wheeling
Paull, A. W., Jr. (A)

WISCONSIN

Appleton
Dobbertin, W. H. (A)

Beloit
Kaplan, M. N. (A)

Brownsville
Beitz, R. E. (A)

Chippewa Falls
Lower, J. W. (A)

De Forest
Tveit, T. J. (A)

Eau Claire
Jorgenson, T. O. (A)

Elm Grove
Bailey, T. J. (A)

Janesville
Clay, W. A. (VA)
Williams, C. R. (A)

Kenosha
Eilenberger, S. D. (SM)
Heide, S. M. (A)

La Crosse
Leeman, A. (VA)
Sweet, R. E. (A)

Lake Geneva
Baird, J. T. (A)

Madison
Allen, H. E. (A)
Bennett, E. (F)
Breit, G. (F)
Conrad, E. (A)
Hilburn, E. D. (A)
Kelley, W. V. (VA)
Koehler, G. (SM)
Kuehl, W. J. (A)
Mason, H. J. (VA)
White, L. R. (A)

Menomonee Falls
Goeden, H. E. (A)
Uminski, G. J. (A)

Milton Junction
Sayre, A. G. (A)

Milwaukee
Aicher, L. C. (A)
Alseth, N. A. (A)
Berge, O. L. (A)
Brennan, C. E. (A)
Butler, L. W. (M)
Chelgren, A. E. (A)
Eckert, F. A. (VA)
Fawcett, H. G. (A)
Gellerup, D. W. (SM)
Glade, H. E. (A)
Gollnick, N. E. (A)
Hanley, R. J. (A)
Hiller, A. J., Jr. (A)
Kaetel, H. C. (VA)
Kaiser, E. H. (A)
Khouri, A. S. (A)
Kreis, E. W. (A)
Kunath, R. A. (A)
Laeser, P. B. (M)
Limpel, E. J. (M)
Matthias, L. H. (VA)
Pedri, J. N. (VA)
Pfeifer, J. W. (VA)
Priem, E. S. (A)
Richard, N. J. (A)
Richardson, M. S. (VA)
Richelieu, C. C. (A)
Richter, W. (SM)
Rubinstein, H. W. (A)
Ruff, H. M. (A)
Sherwood, E. T. (SM)
Taskin, H. A. (A)
Wareing, H. F. (SM)
Weller, D. A. (VA)

Minocqua
Martin, H. T. (A)

Monroe
Olds, H. R. (A)

Neenah
Buestrin, L. P. (A)

Neillsville
Unger, J. W. (A)

New London
Gerks, I. H. (SM)

Oconto
Everson, H. K. (A)

Osceola
Papenfuss, C. A. C. (A)

Oshkosh
Williams, N. (VA)

Phelps
Brown, C. E., Jr. (A)

Pound
Seils, H. A. (VA)

Poynette
Forrest, W. C. (A)

Racine
Campbell, R. H. (VA)
Daniels, V. L. (A)

Rice Lake
Cook, C. (A)

Richfield
Van Alstyne, A. B. (A)

Sheboygan
Mayer, H. J. (A)

Stetsonville
Pueschner, H. O. (A)

Sugar Bush
Remich, J. E. (A)

Superior
Lounsberry, W. H. (A)

Suring
Schreiber, O. W. (A)

Sussex
Davidson, G. L. (A)

Watertown
Naughton, G. J. (VA)

Waukesha
Fordham, C. E. (A)
Hebal, W. H. (VA)
Nettesheim, H. P. (A)

Wausau
Bachhuber, R. A. (A)
Richardt, R. W. (A)

West Depere
Stangel, W. J. (A)

Withee
Ristola, E. G. (A)

Wood
Hachoogan, O. (A)

WYOMING

Casper
Hathaway, D. L. (SM)

Cheyenne
Grove, W. C. (A)
Hartong, H. H. (A)

Rawlins
Seaverson, O. I. (VA)

Sundance
Clingan, H. E. (VA)

ALASKA

Anchorage
Rowe, V. G. (VA)
Southwick, A. F. (A)
Swain, C. W. (A)
Wagner, W. J. (SM)
Walker, R. E. (A)
Wheaton, T. H. (A)

College
Seaton, S. L. (SM)

Fairbanks
Bickel, J. J. (A)

Gulkana
Grimstad, E. J. (A)

Gustavus
Pierce, E. R. (A)

Juneau
Heiser, E. S. (SM)

Kodiak
Ketchum, D. L. (A)
Pace, R. A. (A)
Reukauf, D. C. (A)

Nome
Tucker, J. R. (A)

ARGENTINA

Arnaud, J. P. (SM)
Bolwig, A. C. (A)
Ciancaglini, H. R. (A)
Malvarez, L. M. (VA)
Mazzanti, R. (A)
Novics, B. (A)
Susmanscky, J. (A)
Vuilliomenet, R. H. (A)

Buenos Aires
Abeliansky, M. F. (A)
Acerbi, R. S. (A)
Alzona, A. L. (A)
Andrews, G. J. (SM)
Baldwin, E. V. (A)
Barcala, J. M. (A)
Bartolini, E. (A)
Baylac, J. R. (A)

Benjamin, M. (A)
Bermudez, J. (A)
Bonzo, H. M. (A)
Burmester, E. R. R. (A)
Calvelo, J. P. (A)
Cambre, C. A. (A)
Cassels, W. H. (A)
Cavallero, L. J. (A)
Ciardelli, O. (A)
Cook, W. A. (A)
Cosentino, A. T. (F)
Curto, E. L. (A)
Cutler, C. N. (A)
Dellamula, F. (A)
Di Marco, A. (M)
Di Nunzio, P. F. L. (A)
Dymond, R. C. (A)
Eiras, A. H. (A)
Eiras, R. (A)
Fenyö, T. (A)
Fernandez, O. C. (A)
Gandolfo, A. (A)
García Servidio, L. R. (A)
Garri, M. E. (A)
Gary, A., Jr. (A)
Gil Giron, D. (A)
Glucksmann, A. (A)
Gonzalez, F. (A)
Grant, F. W. (A)
Grant, I. C. (A)
Grousset, W. (A)
Gumpel, J. E. (A)
Guntsche, G. E. (A)
Gurrea, A. (A)
Guzzi, P. N. (A)
Harris, F. (A)
Hassein, A. (A)
Hastings, R. (A)
Hayes, G. W. (VA)
Hunt, G. (A)
Isernia, A. R. (A)
Jadraque, J. M. (A)
Kapus, E. E. (SM)
Kechker, A. I. (A)
Klappenbach, W. (A)
Kline, L. (A)
Kobilsky, M. J. (M)
Koros, L. (A)
Krähenbühl, H. (A)
Labin, E. (A)
Laconca, F. (A)
Lafon, J. B. (A)
Levialdi, A. (A)
Lopez, R. L. (A)
Magno, H. T. (A)
Martinez Deniz, R. (A)
Marzetti, E. J. R. (A)
Mazzeo, R. (A)
McLoughlin, R. P. (SM)
Mitton, J. G. (A)
Nadosy, A. Z. (A)
Nandin, H. E. (A)
Noizeux, P. J. (A)
Nunez, J. (A)
Onativia, J. M. (A)
Osorio, A. E. (A)
Packmann, E. N. (A)
Penin, R. L. (VA)
Pikelin, J. (A)
Pitigliani, L. A. (A)
Pluss, C. P. (A)
Preiser, G. W. (A)
Rey, S. D. (A)
Roganti, M. S. (A)
Rojo, A. (A)
Rueda, J. V. (A)
Saenz, A. M. (A)
Sarli, M. V. (A)
Sckell, A. (A)
Scott, R. H. (SM)
Siemens, R. H. (M)
Simpson, L. C. (SM)
Sipman, L. C. (A)
Sitkovsky, V. (A)
Suarez, C. A. (A)
Svanascini, A. L. (A)
Szenert, G. (A)
Tepper, J. L. (A)
Trench, C. E. (A)
Valdes, S. A. (A)
Van Spankeren, G. H. (SM)
Visscher, J. F. (A)
Westerdahl, S. B. (A)
Yoldi, D. (A)
Ziger, A. (A)

AUSTRALIA

NEW SOUTH WALES

Benson, J. E. (VA)
Brooker, V. M. (SM)
Bushby, T. R. W. (SM)
Crouch, E. C. (A)
Finlay, E. A. (A)
Fry, J. A. (A)
Green, A. L. (F)
Hall, G. G. (VA)
Hall, L. S. (SM)
Hannam, H. W. (A)
Hicks, G. J. (A)
Hopper, D. A. (A)
Hynes, F. M. B. (VA)
Inall, E. K. (A)
Jeffery, C. N. (A)
Knight, J. (A)
Martin, A. F. (A)
Munro, G. H. (SM)
Oakley, G. L. (A)
Poole, C. S. (A)
Smith, A. C. (A)
Swire, B. E. (A)
Thom, F. W. P. (SM)
Walford, F. R. (A)
Wardale, A. H. (A)
Wirsu, O. L. (A)
Wood, H. B. (VA)
Wyles, D. G. (SM)

Burwood
Builder, G. (F)
Formby, J. K. (A)
Jones, C. R. (A)
Treharne, R. F. (A)

Sydney
Bardin, W. F. (SM)
Bean, L. P. R. (SM)
Beard, M. (A)
Bearup, T. W. (SM)
Beresford, B. P. A. (A)
Cansick, N. V. C. (A)
Court, T. P. (A)
Cross, C. E. (A)
Dobbie, L. G. (SM)
Dudman, V. H. (SM)
Egan, R. A. (A)
Grant, G. R. M. (A)
Hibbard, L. U. (A)
Hooke, L. A. (SM)
Kerr, F. J. (A)
Langford-Smith, F. (SM)
Mason, V. O. (A)
McDonald, A. S. (F)
Mingay, O. F. (SM)
Minnett, H. C. (A)
Parish, H. C. (VA)
Pawsey, J. L. (A)
Potter, N. M. (VA)
Rubenstein, S. J. (VA)
Stevenson, M. H. (VA)
Warner, J. (A)

QUEENSLAND

Burmester, O. C. (A)
Ham, G. (VA)
McNicol, R. W. E. (A)
Webster, H. C. (VA)

TASMANIA

Jebb, T. K. (A)
Tuck, H. P. (VA)

VICTORIA

Blair, K. A. W. (A)
Boud, W. E. (A)
Caffin, R. F. (A)
Clyne, E. M. (A)
McCulloch, G. R. (VA)
Murphy, W. T. (A)
Pybus, A. W. L. (A)
Webb, A. L. C. (VA)

Melbourne
Brodribb, M. I. (A)
Glover, A. J. G. (A)
Hooper, E. M. (VA)
Moriarty, O. M. (A)
Serpell, N. (A)
Wade, C. F. N. (SM)

WESTERN AUSTRALIA

Choate, R. S. (A)
Hayman, W. G. (A)
Urquhart, M. S. (A)

BAHAMA ISLANDS

Hodgson, A. D. (A)

BELGIUM

Rose, M. (A)

BERMUDA

Hillier, R. J. (A)

BOLIVIA

Hinojosa, J. A. (A)
Schlicher, K. G. (A)

BRAZIL

Hill, J. H. (A)
Lacombe, C. G. (A)
Pradal, H. A. (A)

Rio de Janeiro
Barzee, G. W. (A)
Borges, V. A. (A)
de Medeiros, L. A. (VA)
De Oliveira, A. M. (SM)
Heininger, W. W. L. (A)
Jones, L. Y., Jr. (A)
Moreira, A. L. (A)
Pareto, J. V. (VA)
Reis Da Silva, S. (A)
Schulman, L. (VA)
Smith, H. E. J. (SM)
Vellasco, A. N. (VA)
Vuyk, W. (A)

São Paulo
Barbosa, H. (VA)
De Arruda, P. R. (A)
De Macedo, A., Jr. (A)
Goldberger, E. M. (M)
Meyer, L. V. (A)
Rubin, L. (M)

BRITISH WEST INDIES

Barbados
Stewart, R. D. (M)

Jamaica
Franklin, E. F. (A)
Gauntlett, G. A. R. (A)

Trinidad
Fung, J. H. (A)

CANADA

Canadian 'Overseas'
Low, A. R. (A)

ALBERTA

Brown, R. H. (M)
Campbell, A. L. (A)
Card, L. C. (A)
Hobbs, N. M. (A)
Hood, R. (A)
Hunka, D. (A)
Johnson, H. C. (A)
Marks, W. R. (A)
Potoski, A. P. (A)
Trusler, G. C. (A)
Webb, L. R. (A)

Calgary
Allan, W. K. (A)
Mac Kay, J. G. (A)
Mason, G. A. R. (A)
Partin, W. (A)
Smith, O. A. (VA)
Thompson, F. S. B. (A)
Williams, E. M. (A)

Edmonton
Bartley, G. A. (A)
MacKenzie, D. G. (A)
Morton, W. G. (A)
Perrier, J. F. (A)
Pon, H. R. (A)
Porteous, J. W. (A)
Rice, G. R. A. (A)
Usher, R. (A)

BRITISH COLUMBIA

Appleton, F. (A)
Batt, F. E. (A)
Browne, J. H. B. (A)
Bunyan, D. E. (A)
Chapman, F. R. (A)
Henderson, G. G. (A)
McLean, L. D. (A)
Pilling, J. (A)
Shewchuk, M. M. (A)

New Westminster
Allard, E. V. (A)
De Marcos, E. C. (A)
Holmquist, A. C. (A)

Vancouver
Amendola, W. A. (A)
Baylis, G. (A)
Carpenter, D. D. (SM)
Chandler, G. C. (A)
Chisholm, E. M. (A)
Chorlton, D. J. (A)
Cushing, T. D. (A)
Deshaw, B. F. (A)
Ellis, A. B. (M)
Forward, W. (A)
Hayward, F. T. (A)
Hedley, C. E. (A)
Jackson, A. (VA)
Mac Leod, H. J. (SM)
Marsh, R. A. (A)
Mayne, L. F. (VA)
Monasch, L. B. (A)
Naylor, B. W. P. (A)
Newbegin, J. A. (A)
Smalley, T. (A)
Thomas, C. W. (A)
Tupper, B. R. (VA)

Victoria
Gilbert, G. (VA)
Pearson, J. R. H. (A)
Rodger, R. G. (A)
Rose, F. W. (VA)
Rowley, H. (A)

MANITOBA

Hamilton, A. R. (A)
King, R. W. (A)
Lee, J. W. H. (A)
Wallace, R. B. (A)

Winnipeg
Anderson, C. A. (A)
Blacker, H. L. (A)
Clements, B. C. (A)
Cole, W. A. (A)
Diamond, M. (A)
Hooper, A. W. (A)
Millar, J. P. (A)
Rayner, H. C. (A)
Robinson, H. D. (A)
Salton, L. V. (M)
Stevens, S. S. (VA)
Swonnell, H. W. E. (A)
Tremblay, C. E. (A)

NEW BRUNSWICK

Anderson, W. H. (A)
Cassidy, S. B. (A)
Collins, F. E. (M)
Fieldhouse, C. M. (A)
Hesler, R. J. (A)
Laporte, J. M. (VA)
Norman, R. O. (A)
Price, J. B. (A)
Smith, H. M. (A)
Wilson, C. T. R. (VA)

NOVA SCOTIA

Demers, R. H. (A)
Harnish, B. W. (A)
Hoyt, C. K. (A)
Mayer, B. (A)
McLean, H. H. (A)

Halifax
Darnell, F. W. (A)
Grant, A. S. G. (A)
Greig, A. W. (A)
Howe, A. E. (A)
Naftel, F. E. (A)
Rafuse, V. C. (A)
Roué, J. E. (A)
Spokowski, F. (A)
Sutherland, A. (VA)

ONTARIO

Ainsworth, A. L. (SM)
Albrough, E. H. (A)
Arnold, C. P. C. (A)
Baxter, R. F. (A)
Bayly, B. de F. (SM)
Bedford, C. F. (A)
Bow, A. (A)
Campbell, W. A. (A)
Cottington, H. T. (A)
Dewar, J. A. (A)
Dewar, J. N. (A)
Doan, G. F. (VA)
Ducasse, W. C. (A)
Fitz-Henry, R. W. (A)
Gates, R. E. (A)
Green, R. L. (A)
Grier, R. W. (A)
Henshaw, C. H. (A)
Hobbs, F. B. (VA)
Holm, H. R. (A)
Hone, D. W. (A)
Keasey, E. T. D. (A)
Kenny, H. J. (A)
Loveys, E. G. (A)
Mann, D. E. (A)
Marchant, C. (A)
McFadden, H. W. (A)
McLeod, J. W. (A)
Moore, J. (A)
Mott, H. E. (A)
Myers, C. E. (A)
Nelson, S. H. (A)
Parker, R. H. (A)
Robinson, C. A. (VA)
Ross, T. G. (A)
Saunders, C. T. (A)
Scott, C. R. (A)
Sharp, V. E. (A)
Shirley, Q. H. (A)
Smith, B. F. (VA)
Smith, C. C. (A)
Smith, W. J. (A)
Stauffer, W. J. (A)
Thomson, J. M. (SM)
Tomlin, R. B. (A)
Underwood, C. (VA)
Vollick, C. N. (A)
Whittaker, E. E. (A)
Wylie, T. C. (A)

Billings Bridge
Davidson, H. H. A. (A)
McLeish, C. W. (A)
Mounce, G. R. (A)

Clinton
Beach, G. E. (A)
Bolton, J. J. (A)
Byers, V. J. (M)
Cooper, J. R. (A)
Coughlin, V. L. (A)
Crosson, W. J. R. (A)
Donovan, L. N. (A)
Fitzallen, J. H. (A)
Fox, C. A. (A)
Gale, G. G. H. (A)
Green, W. B. (A)
Jackson, H. W. (A)
Kehoe, F. P. (A)
Kostashuk, S. S. (A)
Lisle, J. R. D. (A)
Patrick, K. R. (SM)
Powers, R. G. (A)
Riederer, L. A. (A)
Schafer, E. D. W. (A)
Shears, N. K. (A)
Storgaard, E. (A)
Sweet, J. L. (A)
Theedom, L. H. R. (A)
Watson, A. D. (M)
Wilton, R. (M)
Yolles, D. D. (A)

Hamilton
Ainlay, A. (A)
Crofts, C. T. (VA)
Farley, T. S. (SM)
Fleming, J. Y. (A)
Harris, L. R. (A)
Hayward, J. R. (A)
Hunter, H. (A)
Kelterborn, W. H. (VA)
Lucyk, J. W. (A)
Manzer, J. E. (A)
Olson, E. (VA)
Pickett, J. H. (A)
Richards, A. W. (A)
Ruse, E. O. (A)
Rutledge, C. H. (A)
Sievert, A. H. (A)
White, R. H. (A)

Kingston
Chipman, R. A. (A)
Coy, B. A. (A)
Davis, G. A. (A)
Pollock, H. S. (A)
Stewart, H. H. (A)
Webster, C. G. (A)

Kitchener
Banks, F. A. O. (A)
Clewes, T. W. (A)
Hammond, R. E. (M)
Pollock, C. A. (VA)
Smallwood, S. G. (A)

Leaside
Gillmor, H. C. (A)
Gunyou, E. J. (A)
Pounsett, F. H. R. (SM)
Simmonds, L. C. (VA)

London
Allen, R. L. (A)
Athersych, F. B. (A)
Bach, J. R. (SM)
Baker, C. R. (A)
Bellis, M. P. (A)
Boss, N. D. (A)
Bright, J. E. (A)
Dearle, R. C. (SM)
De Montigny, R. I. (A)
Fisher, F. J. (A)
Foster, G. L. (VA)
Furanna, A. L. (M)
Gilbert, R. L. (A)
Graham, B. (SM)
Gunton, R. C. (A)
Jackson, C. M. (A)
Jarvis, G. C. (A)
Jeffcott, F. B. (A)
Jeffries, K. (A)
Kimble, E. B. (A)
Laird, E. R. (A)
Langford, C. H. (A)
Love, G. R. (A)
Madill, L. J. (A)
McLaughlin, W. A. (A)
Paterson, J. G. (A)
Phillips, W. E. (A)
Prodger, A. (A)
Ross, A. L. (A)
Ruth, G. C. (A)
Sanders, G. E. (A)
Schavo, A. F. (A)

Simpson, J. (M)
Suchard, D. G. (A)
Tull, E. H. (M)
Warder, F. C. (A)
Williams, H. L. (A)
Woonton, G. A. (SM)

Ottawa
Breeze, J. E. (A)
Browne, G. C. W. (SM)
Brunton, D. C. (A)
Carroll, D. V. (M)
Carty, D. (A)
Davis, J. F. (A)
Dingle, W. H. (A)
Fawcett, G. M. (VA)
Field, G. S. (VA)
Fraser, J. S. (A)
Galbraith, R. A. H. (A)
Gilbert, M. (A)
Hanna, F. M. (A)
Hartley, M. S. (A)
Henderson, J. P. (SM)
Hill, M. O. (A)
Hings, D. L. (VA)
Hobson, W. (A)
Kerr, G. O. (A)
Kowch, S. D. (A)
Macdonald, J. A. (A)
Mac Innes, M. (A)
MacKay, J. R. (A)
McIntosh, J. A. (A)
McKinley, D. W. R. (VA)
Merriman, H. O. (VA)
Miller, G. A. (A)
Millett, L. F. (M)
Modley-Jones, H. S. (A)
Nixon, F. G. (A)
Park, F. R. (M)
Reiche, H. (A)
Rioux, P. G. (A)
Risteen, H. C. (A)
Robinson, E. F. V. (M)
Rowlands, T. E. (A)
Ruedy, R. (A)
Rugg, H. H. (M)
Rush, W. A. (F)
Shaw, D. T. (A)
Simpson, F. W. (A)
Smith, A. H. R. (SM)
Smith, K. G. (A)
Smith, W. B. (M)
Soucy, C. I. (VA)
Staniforth, A. (A)
Steel, W. A. (SM)
Stopps, R. E. (A)
Surtees, W. J. (A)
Swinton, K. R. (A)
Taber, H. E. (VA)
Walsh, H. E. (M)
Welsh, W. (A)
Whealy, J. E. (M)
Wighton, J. J. (A)
Wilson, J. E. (A)
Wilson, W. R. (VA)
Wright, C. M. (M)

Peterborough
Boote, E. (A)
Carew, S. S. J. (A)
Hall, G. H. (A)

Saint Thomas
Davison, J. M. (A)
Ferguson, K. A. (A)
Stewart, R. I. (A)

Toronto
Adams, R. L. (A)
Allen, J. K. (A)
Angus, W. M. (A)
Anthes, R. G. (VA)
Armitage, G. (M)
Armstrong, H. D. (VA)
Armstrong, J. W. (A)
Artkin, W. H., Jr. (A)
Baldwin, C. O. (VA)
Bamford, D. A. (A)
Bartholomew, L. E. (A)
Bell, H. C. (A)
Berlin, A. D. (A)
Blackett, L. G. (A)
Bridgland, C. J. (SM)
Brodsky, S. (A)
Brown, W. C. (A)
Buckley, E. F. (A)
Butt, H. G. (A)
Cairns, J. R. (A)
Chapman, C. N. (A)
Chinnick, R. F. (A)
Choat, W. F. (M)
Clark, W. B. (SM)
Collins, E. F. (A)
Collins, G. A. (A)
Cox, F. J. (A)
Crooks, T. E. (A)
Dakin, O. C. (A)
Davis, A. P. (A)
Dawson, H. S. (SM)
Diamond, S. (A)
Dike, E. E. (A)
Dinnin, A. J. (A)
Doidge, E. E. (A)
Dworkin, A. E. (A)
Elliott, A. W. D. (A)
Else, S. C. (A)
Evis, F. A. (A)
Fabb, N. R. (A)
Featherstone, C. R. (A)
Fedorkiw, M. (A)
Fennell, D. C. (A)
Fisher, G. W. (A)
Flynn, J. T. (A)
Ford, J. S. (VA)
Geiger, D. G. (SM)
Glazer, A. E. (M)
Goldin, H. C. (M)
Gotlieb, C. C. (A)
Gould, H. J. (A)
Guess, A. L. (A)
Hackbusch, R. A. (F)
Hamilton, H. E. S. (A)
Harris, D. L. (A)
Harvey, H. A. (A)
Hawkins, R. M. (A)
Hayward, V. A. (A)
Heath, F. J. (SM)
Henry, D. A. T. (A)
Henry, J. H. (A)
Hogan, J. F. (A)
Hooper, J. F. (A)
Hunter, G. E. (A)
Irwin, D. A. (A)
Irwin, G. J. (SM)
Jarvis, L. (A)
Kelk, G. F. (A)
Kidd, K. H. (A)
Kohl, W. H. (SM)
Lazowski, J. M. (A)
Leary, A. R. J. (M)
Leaver, E. W. (A)
Leslie, I. M. (VA)
Leslie, J. M. (VA)
Liss, I. M. (A)
Lloyd, C. G. (M)
Longstaffe, J. R. (VA)
Lumsden, R. B. (A)
Mackay, F. S. (VA)
Mac Kenzie, K. (A)
Mathers, F. F. (A)
Mc Alpine, W. H. (A)
McCurdy, G. E. (A)
McLaughlin, G. H. (A)
Meyer, W. H. (A)
Michaud, R. G. (A)
Millen, T. I. (M)
Morris, M. (A)
Muller, R. (A)
Nako, G. (A)
Naylor, R. W. (A)
Norris, C. A. (A)
Nylin, M. E. (A)
Paddon, J. W. (SM)
Paisley, S. R. (A)
Pashler, P. E. (A)
Patterson, M. C. (VA)
Pfeiffer, J. T. (VA)
Porter, B. F. (A)
Poulter, R. C. (SM)
Price, L. M. (VA)
Richardson, C. L. (M)
Robertson, H. G. (A)
Robertson, J. J. C. (VA)
Robinson, W. A. (A)
Rome, A. H. (A)
Rubinoff, M. (A)
St. Andrews, J. G. (A)
Sangster, R. (A)
Sayers, H. W. R. (A)
Schawlow, A. L., Jr. (A)
Smith, K. C. (A)
Stacey, J. F. (A)
Swan, E. O. (M)
Thompson, W. W. (A)
Tonkin, H. W. (VA)
Ward, W. C. (A)
Warren, J. R. (SM)
Whyte, J. R. (A)
Williams, J. K. (VA)
Wilson, W. E. C. (A)
Ziegler, M. (SM)

PRINCE EDWARD ISLAND

Murray, C. W. (A)

QUEBEC

Beaulieu, W. R. (M)
Bird, C. H. R. (VA)
Bonneville, S. (A)
Booker, C. C. (A)
Brant, C. M. (VA)
Clarkson, L. (A)
Cooper, S. J. (VA)
Dumka, J. (A)
Emond, G. H. (A)
Farmer, E. W. (VA)
Fournier, R. (A)
Frenette, C. (VA)
Hanna, R. D. (A)
Hudson, G. W. (A)
Klassen, B. (A)
Logan, G. R. (A)
Marceau, J. P. (VA)
McWilliam, E. A. (VA)
Montgomery, V. A. (A)
Nadeau, A. G. (A)
Newton, W. A. (A)
O'Brien, F. G. (A)
Owen, J. R. (A)
Pugh, J. E. (A)
Punchard, J. C. R. (SM)
Rosen, C. A. (A)
Rosenthal, A. L. (A)
Sarault, G. E. (A)
Thompson, P. A. (A)
Wade, D. (VA)
Wallace, O. C. S. (A)
Watson, G. D. (A)

Montreal
Alcock, N. Z. (A)
Anderson, D. A. (A)
Anderson, G. H. (A)
Arbon, R. D. (A)
Archambault, G. (A)
Baily, F. A. A. (M)
Bain, J. R. (VA)
Barrow, F. A. (VA)
Bayley, A. K. (VA)
Bellamy, R. S. (A)
Bennett, J. R. G. (A)
Bonner, E. C. (A)
Brereton, C. H. (M)
Brian, J. M. (VA)
Cahoon, R. D. (VA)
Campbell, D. K. (A)
Campbell, J. A. (SM)
Cardella, O. L. (A)
Casian, W. R. (A)
Childerhose, R. H. (A)
Coates, W. H. H. (A)
Collins, J. A. (A)
Conroy, J. M. (VA)
Dean, W. W. H. (M)
Delafield, J. D. (A)
De Paul, V. A. (A)
Desaulniers, R. R. (VA)
Doig, W. J. (M)
Doyle, W. P. (A)
Duff, G. G. (A)
East, L. A. W. (SM)
Field, P. A. (VA)
Filman, N. J. (A)
Fisher, F. S. (M)
Fisher, S. T. (SM)
Fisher, W. C. (M)
Fisk, R. M. P. (A)
Fowlie, W. D. (VA)
Freundlich, H. F. (VA)
Gissing, H. R. (A)
Glaser, R. A. (A)
Glinski, G. (M)
Grant, J. A. (A)
Gregory, A. H. (A)
Groome, G. R. (A)
Guichon, L. (A)
Handley, E. E. (A)
Hayes, J. E. (VA)
Hayles, O. J. (A)
Heath, D. W. (A)
Hicks, B. C. (VA)
Holzman, L. (VA)
Horsey, R. M. (A)
Howes, F. S. (SM)
Hunt, A. B. (SM)
Iliffe, F. H. (A)
Isaac, V. E. (A)
Jackson, J. E. (A)
Jaderholm, H. W. (VA)
Katch, M. (A)
Kelsey, E. S. (A)
Knights, S. F. (A)
Knox, J. B. (VA)
Kucharsky, M. H. (A)
L'Allier, L. (M)
Lalonde, R. P. (A)
Lambton, F. R. (A)
Lanz, J. E. (A)
Letts, R. (A)
Lindsay, G. A. E. (A)
Little, W. C. (A)
Lunan, W. A. (A)
Malchow, M. E. (A)
Marriott, B. (A)
Marshall, G. K. (A)
Martin, J. H. (A)
Martin, W. S. (A)
Mayhew, M. B. (A)
McElhinney, G. S. (A)
McKendry, B. A. (M)
McLean, J. W. (A)
McNeil, B. T. (M)
Meades, H. J. (A)
Meek, T. J., Jr. (A)
Mellen, G. H. (A)
Merson, L. N. (A)
Michon, E. (A)
Millar, C. H. (M)
Miller, J. L. (A)
Mitchell, J. C. E. (A)
Muirhead, C. R. (A)
Murdock, C. D. (A)
Nichols, W. A. (SM)
Nienaltowski, W. (A)
Olding, N. R. (M)
Olive, G. W. (VA)
Ouimet, J. A. (SM)
Oxley, A. B. (M)
Patience, A. M. (SM)
Pauch, J. E. (M)
Pavlasek, T. J. F. (A)
Payne, L. S. (SM)
Pratt, J. H. (M)
Prinsky, H. B. (A)
Provost, P. (A)
Quance, F. R. (A)
Richardson, W. G. (SM)
Roach, C. L. (VA)
Ross, W. B. (VA)
Schwartz, H. H. (M)
Seabrook, H. B. (M)
Sheffield, J. (A)
Sillitoe, S. (VA)
Smith, F. A. (A)
Smith, J. W. (A)
Smith, R. L. (A)
Smith, W. J. (A)
Stephen, W. T. (M)
Thomson, J. J. (A)
Tiedemann, D. P. (SM)
Todds, J. G. (M)
Truesdell, E. N. (A)
Waller, M. J. (A)
Watters, E. S. (M)
Wells, G. (A)
Werry, M. J. (M)
Wilding, M. F. (A)
Woodhead, R. C. (VA)
Woodley, C. B. (A)
Woodley, E. H. (A)

Mount Royal
Bird, L. T. (M)
Booth, A. A. (M)
Cooke, R. W. (A)
Elliott, L. W. (VA)
Rushbrook, S. H. (VA)
Wallace, R. J. (M)

Saint Hyacinthe
Alford, W. D. (A)
Loucks, W. W. (A)
Mason, V. V. (A)
Wilson, R. W. (A)

Westmount
Clerk, R. D. (VA)
Gillean, I. (A)
Mac Kimmie, G. B. (A)
McMurray, J. L. (VA)
Raynsford, R. P. (M)

SASKATCHEWAN

Chapman, W. E. (A)
Edwards, R. O. (A)
Hoskins, L. C. (A)
Marshall, J. L. (A)
McBurney, A. R. (A)
Michalenko, A. (A)
Munson, J. F. (A)
Tash, B. (A)
Watson, W. H. (A)

CANAL ZONE

Codington, J. H. (VA)

CHILE

Elliott, S. J. (A)
Lazo, F. A. M. (A)
Olavarria, E. A. (A)

Santiago
Femenias, H. R. (A)
Melendez, A. F. A. (A)
Pinto, G. (A)
Rosene, K. T. (A)

CHINA

Maa, D. Y. (M)

COLOMBIA

Amore, I. (VA)
De Mello, W. (VA)
Edleman, V. W. (A)
Silva, W. (VA)

COSTA RICA

Carazo, L. A. (VA)

CUBA

Armand, E. J. A. (A)
Cardenas, J. (A)
Chisholm, E. E. (A)
Condom Sastre, A. (A)
Guiral, R. L. (VA)
Jimenez, G. L. (A)
Jimenez, M. A. (A)
Karman-Barrie, R. (VA)
Montes, J. V. (A)
Olmo, M. M. (A)
Polanco, G. (A)
Ramirez, C. G. (A)

CYPRUS

Dennis, F. L. (A)

DENMARK

Erstad, J. A. (A)
Rybner, J. (VA)

EGYPT

De Barro, F. (A)
Mahmoud, H. M. (A)
Mathias, E. L. A. (A)
Rose, S. P. (A)
Russell, H. J. (A)

EIRE

Ferguson, J. D. (SM)
Poole, H. H. (A)
Walton, E. T. S. (A)

ENGLAND

BEDFORD

Brownless, S. F. (VA)
Cooper, R. G. (A)
Knight, L. (A)
Vedy, L. G. (VA)

BERKSHIRE

Simons, A. H. B. (SM)

BUCKINGHAM

Brooke, H. A. (A)
Christmas, A. N. (A)
Dawe, F. W. (A)
Diver, F. G. (A)
Dobell, H. (SM)
Hobday, S. W. (A)
Lee, A. G. (F)
Mackenzie, D. G. (A)
Rhys-Jones, J. E. (A)
Scott-Taggart, J. (F)
Sly, R. J. (A)

CAMBRIDGE

Booker, H. G. (SM)
Edwards, B. J. (SM)
Liebmann, G. (A)
Moullin, E. B. (SM)
Pound, J. P. (A)
Ratcliffe, J. A. (A)
Rayment, K. I. (A)
Turner, L. B. (VA)

CHESHIRE

Barker, P. L. (SM)
Gregson, W. D. H. (A)
Higham, E. H. (A)
Horrocks, R. D. (A)
Taylor, M. K. (SM)
Veevers, J. F. (A)
Vernon, B. H. (A)

CUMBERLAND

Bennett, H. V. (A)
Nicoll, W. L. (VA)
Williams, C. E. (A)

DERBY

Buckland, V. (A)
Holling, K. (M)

DEVON

Holsgrove, H. E. (A)
Nelson, R. H. E. (A)

DORSET

Bowden, H. F. (A)
Stone, B. C. (M)
Wilson, T. M. (A)

DURHAM

Parsons, D. R. (A)
Patterson, T. C. (A)

ESSEX

Aikman, J. (A)
Amey, S. H. (A)
Beasley, E. W. (A)

Beck, A. H. W. (VA)
Bulgin, A. F. (SM)
Cafferata, H. (M)
Churchman, A. (A)
Cooper, V. J. (A)
Crick, W. R. (A)
Davies, R. H. (SM)
Davis, N. E. (A)
Deeley, A. R. (A)
Ditcham, W. T. (SM)
Duerden, F. (A)
Dyson, G. N. (A)
Eckersley, T. L. (F)
Edmunds, J. S. (A)
Fierman, C. (A)
Inskip, F. A. (VA)
Jones, E. (A)
Landman, A. (A)
Larkins, D. H. (A)
Lassman, H. H. (A)
Mitchell, R. J. (A)
O'Brien, D. (A)
O'Donovan, D. E. (A)
O'Neill, R. F. (VA)
Parker, J. W. (A)
Parkin, T. D. (VA)
Partington, G. E. (A)
Petersen, T. G. (VA)
Picken, W. J. (VA)
Robertson, N. C. (SM)
Shore, A. (A)
Simmonds, R. E. (A)
Smith, S. B. (SM)
Sproule, D. O. (A)
Stamford, N. C. (SM)
Stead, C. (A)
Straw, F. W. (A)
Tooley, M. D. (A)
Trott, R. J. (A)
Wintle, M. F. (A)
Young, A. J. (A)

GLOUCESTER

Cram, L. A. (A)
Hillier, M. (A)
Van Ryn, B. (A)

HAMPSHIRE

Budden, K. G. (A)
Chapman, J. P. J. (VA)
Clayton, C. G. (A)
Coursey, P. R. (A)
Crosfield, J. F. (A)
Fayers, A. A. (A)
Forsyth, P. G. (SM)
Mallinson, W. D. (VA)
Orba, A. (M)
Pattinson, T. H. (A)
Phillips, C. M. (A)
Pudney, L. C. (A)
Reid, D. G. (VA)
Snowden, J. (A)
Steel, G. (A)
Whatman, A. B. (A)
Whitaker, G. C. F. (A)
Woods, C. H. (VA)

HERTFORD

Benjamin, R. (A)
Catt, J. E. (SM)
Cattanes, E. (A)
Denton, A. D. (A)
Fryer, L. (A)
George, B. C. (A)
Hollinghurst, F. (A)
Kaye, J. B. (VA)
Liu, M. H. (A)
Marsden, B. (A)
Mortlock, A. (A)
Newson, J. V. (A)
Reyner, J. H. (SM)
Spagnoletti, P. H. (A)
Straker, N. (A)
Taylor, W. (A)
Thomson, F. P. (M)
Truscott, D. N. (VA)
Tung, Y. (A)
Williams, R. C. G. (SM)

KENT

Barber, H. J. (VA)
Binyon, B. (SM)
Crossfield, G. B. (A)
Davidson, J. A. B. (A)
Griffiths, H. V. (SM)
Hale, J. A. B. (A)
Herdman, T. L. (A)
Hesse, C. M. (A)
Lawrence, E. (VA)
Leicester, E. J. (A)
Mabe, W. S. (A)
Minter, R. W. (SM)
Preist, D. H. (M)
Scroggie, M. G. (A)
Scully, C. T. (SM)
Shorland, H. (M)
Stoner, C. R. (M)
Stratton, A. (A)
Sutherland, J. G. A. (SM)
Tyrrell, A. J. (A)
Woods, A. R. (A)

LANCASHIRE

Atkin, F. W. T. (A)
Chalmers, D. (A)
Fielding, E. A. (A)
Hartley, K. A. (A)
Herczeg, A. (A)
Highnam, K. (A)
Kenyon, P. (A)
Lever, H. R. (A)
Leyland, A. J. (A)
Oxley, R. F. (SM)
Quayle, J. C. (SM)
Rollin, L. (A)
Simpson, A. V. (SM)

Manchester
Davies, E. W. (A)
Oxley, G. C. (A)
Pearson, P. M. (A)
Searby, N. H. (SM)
Tomlin, G. M. (A)
Weaver, C. (A)

LEICESTER

Barnard, R. M. (A)
Mansell, L. H. (SM)

LINCOLN

Claxton, M. E. (A)

LONDON

Adorjan, P. (SM)
Appleton, E. V. (F)
Ashbridge, N. (F)
Ashman, G. L. (A)
Baer, J. (A)
Beatty, W. A. (SM)
Bedford, L. H. (SM)
Billington, R. M. (A)
Bishop, H. (F)
Brown, D. P. E. (A)
Bruce, J. R. (A)
Bull, V. G. (SM)
Burgess, A. G. (A)
Chambers, A. G. (M)
Chatterjea, P. K. (SM)
Chou, T. (A)
Cobb, F. A. (SM)
Cohen, I. J. (VA)
Conway, T. D. (A)
Cox, E. B. (A)
Crampton, W. J. (SM)
Crawley, J. C. W. (A)
Davies, B. T. (A)
Dawe, P. G. M. (A)
Doherty, E. J. (A)
Dos Santos, P. A. (A)
Dumeresque, J. S. (SM)
Dumert, V. (A)
Dyson, A. A. (VA)
Earp, C. W. (SM)
Edes, N. H. (VA)
Elwell, C. F. (F)
Ewing, E. G. (A)
Faulkner, H. (SM)
Fitzgerald, J. A. (A)
Franco, M. (A)
Gamsa, L. (A)
George, P. H. F. (A)
Gill, A. J. (F)
Godfrey, E. H. (A)
Gould, N. G. (A)
Greig, J. (VA)
Griffiths, W. H. F. (SM)
Hamilton, D. (VA)
Hanbury-Brown, R. (M)
Hansford, R. N. (A)
Harries, J. H. O. (SM)
Hart, E. D. (M)
Hayes, L. W. (F)
Head, J. E. (A)
Heaton-Armstrong, J. (SM)
Innes-Crump, J. E. (SM)
Instrall, R. C. (VA)
Johnson, D. H. (A)
Kirke, H. L. (F)
Knight, S. G. (A)
Lawson, P. J. (A)
Levy, O. I. (A)
Lyons, C. L. (SM)
Maartmann-Moe, R. (A)
Macnee, D. H. (A)
McMichael, L. (F)
Meyer, L. W. (SM)
Mirk, D. B. (SM)
Morgan, E. (A)
Nicholls, G. K. (A)
Parr, G. (A)
Philippart, H. A. S. (A)
Pilling, T. (A)
Pocock, H. S. (SM)
Potts, E. (A)
Rehfisch, T. J. (A)
Ringham, G. B. (SM)
Roberts, F. F. (A)
Roberts, R. S. (VA)
Rose, A. (A)
Schroter, E. (A)
Schwarz, H. F. (A)
Sherley-Price, D. R. (A)
Smith, C. (A)
Smith, I. F. (M)
Smith, N. A. (A)
Starr, C. H. (SM)
Stott, H. T. (VA)
Strong, C. E. (SM)
Sung, L. C. (A)
Swinney, E. (A)
Thomsett, H. S. (A)
Tingey, R. (SM)
Troutbeck, W. H. (VA)
Tucker, D. G. (A)
Twiss, A. R. (SM)
Ullrich, E. H. (F)
Van Voorst, M. (VA)
Varley, W. E. C. (A)
Wallace, T. (A)
Walmsley, T. (SM)
Waterton, P. J. (A)
Weston, J. D. (A)
Wey, R. J. (A)
Wilkinson, H. (VA)
Willoughby, E. O. (A)

MIDDLESEX

Baxter, H. W. (VA)
Cater, C. E. (A)
Cheadle, H. A. (A)
Cooper, W. H. B. (A)
Cox, F. (A)
Dale, T. G. M. (A)
Davidson, C. F. (A)
Duerdoth, W. T. (A)
Emery, E. J. (SM)
Farmer, J. C. (A)
Fisk, E. T. (F)
Gavin, M. R. (A)
Gerrard, G. R. (A)
Hinton, W. R. (A)
Hosking, W. J. C. (A)
Howse, H. A. G. (SM)
Lunt, C. (VA)
McPherson, W. L. (SM)
Mole, G. (A)
Montgomery, A. W. (SM)
Rapson, E. T. A. (A)
Roberts, G. N. (A)
Rosenberg, W. (A)
Simmonds, J. C. (A)
Smith-Rose, R. L. (F)
Steed, F. S. (A)
Tanner, R. H. (A)
Thomas, H. A. (SM)
Whiddett, S. D. (A)

MONMOUTH

Jennions, A. E. (M)

NORFOLK

Lovewell, S. S. (A)

NORTHAMPTON

Murray, J. W. (A)

NORTHUMBERLAND

Bolam, G. D. (A)
Grove, S. H. (VA)
Hodgson, C. C. V. (M)
Pattinson, K. (A)

NOTTINGHAM

Allan, A. H. (A)
Clipstone, A. E. (A)
Dabell, H. (A)
Davies, J. (A)
Exwood, M. (A)
Getliffe, R. (A)
Goacher, H. (A)
Mc Glashan, A. R. (A)
Terry, E. (A)
Thomas, D. H. (A)

OXFORD

Keen, A. W. (A)

SHROPSHIRE

Fay, P. J. (A)
Parkinson, W. R. (A)

SOMERSET

Bird, R. J. (SM)
Clarke, A. C. (A)
Gibson, W. T. (SM)
McLaren, J. P. (A)
Scott, P. R. (VA)
Smyth, C. N. (SM)

STAFFORD

Hanson, A. W. (A)
Hardcastle, C. (A)
McDonald, D. M. (A)
Myers, L. M. (A)

SUFFOLK

Wilkins, A. F. (A)

SURREY

Bainbridge-Bell, L. H. (VA)
Baxter, C. (SM)
Beadle, D. G. (A)
Borgars, S. J. (A)
Campbell, D. (A)
Carpenter, R. E. H. (SM)
Chorley, J. M. (A)
Coales, J. F. (A)
Collyer, D. J. (A)
Ford, D. (A)
Gabriel, R. P. (VA)
Harvey, J. P. (A)
Hase, R. W. (A)
Hewlett, F. M. (A)
Hickson, P. W. (SM)
Hornby, F. R. (A)
Howard, R. (A)
Jennings, R. E. (A)
Jones, L. C. (A)
Joseph, J. (SM)
Lane, C. V. (A)
Lear, P. R. (A)
Lee, W. H. (A)
Lewis, H. A. (A)
Milsom, W. T. (A)
Moon, J. L. (A)
Morris, R. P. (M)
Nobbs, W. J. (A)
Parker, J. D. (A)
Payne, C. E. (VA)
Prakash, C. (A)
Rickard, C. E. (SM)
Rosenblum, B. (A)
Russell, A. W. (A)
Rzymowski, E. (A)
Silvester, D. D. (A)
Somerville, T. (A)
Stopher, H. (A)
Thompson, A. E. (SM)
Tibbs, C. E. (A)
Walker, D. C. (A)
Wheatley, B. M. (A)
Whitney, L. C. (A)

SUSSEX

Johnston, D. L. (A)
Masters, E. F. O. (A)
Newham, R. H. (A)
Roberts, W. G. (A)
Truefitt, E. V. (A)

WARWICK

Chen, L. (A)
Binns, A. W. (A)
Bloomer, A. (M)
Hulme, F. H. (M)
Kinman, T. H. (SM)
Lovelock, R. T. (VA)
Robinson, C. A. (A)
Skerry, C. E. (A)
Sharp, S. (A)

Birmingham
Baillie, W. L. (M)
Gardner, A. J. (A)
Kendall, J. S. (A)
Mills, J. E. (A)
Taylor, D. (A)

WILTSHIRE

Cook, K. L. W. (A)
Elliott, B. C. (A)
McLaren, J. H. (A)
Shearman, J. M. (A)
Sowerby, J. M. (A)
Walker, T. (M)

WORCESTER

Carter, C. J. (SM)
Carter, R. H. A. (A)
Clarke, G. F. (A)
Clegg, J. E. (SM)
Dandy, E. (A)
Fogg, C. P. (A)
Fry, D. W. (A)
Hawkeswood, A. E. (A)
MacFarlane, G. G. (VA)
McLean, F. C. (A)
Parsons, L. W. (A)
Richardson, W. D. (VA)
Slow, E. C. (VA)
Starr, A. T. (A)
Walker, P. H. (A)
Wells, F. H. (A)
Wheeler, J. S. C. (A)
Whitehead, J. R. (SM)

YORKSHIRE

Bradley, J. H. (A)
Dixon, G. F. (A)
Gardner, D. H. (A)
Gautby, H. R. B. (A)
Hall, L. L. (A)
Mole, J. H. (A)
Patchett, G. N. (M)
Sayers, G. S. (A)
Stephenson, L. (A)
Symonds, A. E. J. (VA)
Tipton, H. (A)
Westwood, D. (M)
Woodcock, N. A. (VA)

FIJI ISLANDS

Exon, F. C. (A)

FRANCE

Behm, L. F. (A)
Churg, E. E. C. (A)
Clavier, A. G. (A)
Lehmann, G. J. (SM)
Reynolds, C. B. (M)

GREECE

Pezopoulos, K. N. (SM)

GUATEMALA

White, R. F. (A)

HAWAIIAN ISLANDS

Honolulu
Atherton, J. B. (A)
Chang, D. C. (A)
Chung, J. K. S. (A)
Edwards, W. E. (M)
Grubb, D. L. (A)
Higa, W. H. (A)
Holbrook, J. G. (A)
Janitschke, E. O. (VA)
Kent, S. F. (VA)
Miyake, I. (VA)
Molby, L. H. (A)
Nakao, G. H. (A)
Reilly, J. A. (A)
Sturdy, E. W. (A)
Takase, R. H. (VA)
Thornton, J. P. (VA)

Kauai
Klima, W. M. (A)
Larsen, D. A. (A)
Wada, J. C. (VA)

Oahu
Anagnost, A. L. (A)
Cassidy, B. F. R. (A)
Dows, S. M. (A)
Gray, G. P. (VA)
Kekauoha, G. W. (A)
Shryack, L. A. (A)

HOLLAND

Amsterdam, C. F. (A)
Van Der Pol, B. (F)

INDIA

Ahmed, W. (A)
Aiya, S. V. C. (SM)
Bhashyam, S. R. (A)
Chakravarti, S. P. (SM)
Doshi, K. M. (A)
Ganguly, S. K. (A)
Kakkeri, V. S. (A)
Khosla, H. L. (A)
Mahalingam, N. (A)
Mani, C. V. (A)
Mathur, K. B. (A)
Pai, M. V. (A)
Paramasivayya, G. S. (A)
Raja, R. V. M. (A)
Row, D. P. (SM)
Sastry, S. S. (VA)
Shah, C. C. (A)
Tandan, R. K. (A)
Varadaraj, K. (A)
Verman, L. C. (A)

MADRAS

Belgamvala, M. K. (A)
Krishnamurthy, J. (A)
Pattabiraman, J. (A)
Ramakrishnan, P. R. (A)
Rao, M. K. (A)
Rao, V. V. L. (A)

Sarma, P. H. N. (A)
Seshadri, T. N. (A)
Sreenivasan, K. (SM)

Allahabad
Joshi, C. P. (A)
Shankar, G. (A)
Toshniwal, B. D. (A)

Bombay
Anns, J. J. (A)
Dastur, J. B. (A)
De Figueiredo, B. F. (A)
Desai, R. L. (A)
Husein, A. E. (A)
Kantebet, S. R. (SM)
Karnik, M. B. (A)
Kumar, P. (A)
Mugaseth, P. P. (A)
Phatak, R. K. (M)
Punekar, A. D. (A)
Ramamurti, T. V. (A)
Shroff, T. R. (A)

Calcutta
Banerji, S. (A)
Chatterjee, S. K. (A)
Dutt, N. L. (A)
Thacker, M. S. (A)

New Delhi
Baliga, B. V. (VA)
Rao, G. V. (A)
Toshniwal, G. R. (SM)

IRAQ

Sulman, I. (A)
Swery, J. S. (A)

KENYA COLONY

Gross, J. (A)
Madgwick, G. (SM)
Pegrume, S. A. (A)

MALAYA

Gee, W. C. (M)

MEXICO

Carrillo, E. A. (A)
Fernandez, M. A. (VA)
Guaragna, L. F. (VA)
Jara, F. S. (A)
Kurz, T. M. (A)
Rodriguez, M. F. (A)

MIDDLE EAST FORCES

Kidd, C. S. (A)

NEWFOUNDLAND

Brown, W. A. (VA)
Godwin, H. B. (A)
Tucker, F. M. (A)

NEW ZEALAND

Bowers, L. G. (A)
Crawford, W. C. (A)
Jack, R. (VA)

Auckland
Blackwell, W. J. (A)
Chan, G. (A)
Gavin, F. (A)
Hansen, I. C. (A)
Jack, M. C. (A)
Joseph, D. P. (A)
Kirton, F. N. (A)
Mayo, L. E. (A)
McRae, I. H. (VA)
Orbell, R. J. (A)
Sache, D. A. (A)
Shackelford, J. W. (A)
Sturton, C. H. (A)
Tonson, A. E. (A)

Christchurch
Henderson, B. G. (A)
Lee, W. C. (A)
Moore, J. (A)
Russell, C. R. (SM)

Gisborne
Leslie, D. A. (A)
Paulson, E. J. (VA)
Wadham, C. W. (A)

Wellington
Cholmondeley-Smith, D. R. (A)
Clarkson, T. R. (A)
Hurrell, L. W. (A)
Lomas, J. P. (A)
McLennan, R. A. (SM)
Palmer, N. R. (A)
Smith, J. R. (A)
Swann, N. W. (A)

NORTHERN IRELAND

Coles, R. V. (SM)

NORWAY

Hoff, K. (A)
Nickelsen, J. C. (VA)

PALESTINE

Margalith, A. (A)
Palmer, J. R. B. (A)
Schaerf, M. (A)
Zelinger, G. (A)

PANAMA

Mendez, L. (A)

PARAGUAY

Myers, O. C. (A)
Schoemaker, J. P. (A)

PERU

Kline, J. (A)
La Pierre, V. M. (M)
Tringham, W. S. L. (A)

PORTUGAL

Antunes, M. (A)
De Bivar, A. M. B. (SM)
Victorino, J. M. C. (A)

PUERTO RICO

Aviles-Brunet, J. M. (A)
del Valle, A. P. (A)
Dueno, B. (A)
Hackman, E. H. (VA)
Kenrick, G. W. (F)
Monod, C. P. (A)
Perry, R. P. (A)
Rundlett, L. M. (M)
Schell, R., Jr. (VA)

SCOTLAND

Armstrong, J. J. (A)
Dunn, S. C. (A)
Howie, R. C. (A)
Lenihan, J. M. A. (A)
McCallum, D. M. (A)
McGillivary, J. A. (A)
Mellon, D. C. H. (A)
Oliphant, W. D. (SM)
Redmond, J. (A)
Ross, K. (A)
Shearer, R. L. (M)
Smail, J. E. (A)
Sproule, R. A. (A)

SOUTH AFRICA

Cotty, W. F. (A)
Dunbar, J. (A)
Forrester, A. W. (A)
Gotsman, B. (A)
Olën, C. L. (A)
Patrick, P. E. (VA)
Reid, O. W. (M)
Smuts, M. N. (A)
White, A. W. (A)

Cape Town
Birrell, A. (A)
Brickhill, G. A. (A)
De Jong, A. C. (A)
Gilmour, R. R. (A)
Nutt, A. (A)
Poole, J. P. (A)

Durban
Botha, F. G. E. (A)
Dickens, W. D. (A)

Johannesburg
Bozzoli, G. R. (A)
Goetz, M. (A)
Goldblatt, R. (A)
Main, F. S. (A)
Middleton, E. J. (A)
Ross, C. G., Jr. (A)
Sackson, H. (A)
Sive, F. (A)
Talbot-Jones, R. V. (A)
Troost, N. (A)
Van Der Bijl, H. J. (F)
Walker, G. D. (A)

Pretoria
Boyce, C. F. (A)
Trainor, H. M. (A)

SWEDEN

Kruse, O. S. N. (A)
Lofgren, E. O. (VA)
Lundwall, B. H. (A)
Stannow, J. C. (A)

SWITZERLAND

Gross, G. C. (SM)
Guanella, G. (A)
Stuber, R. (A)

URUGUAY

Garcia, L. A. (A)
Pomeroy, D. (A)
Valverde, R. D. (VA)

U.S.S.R.

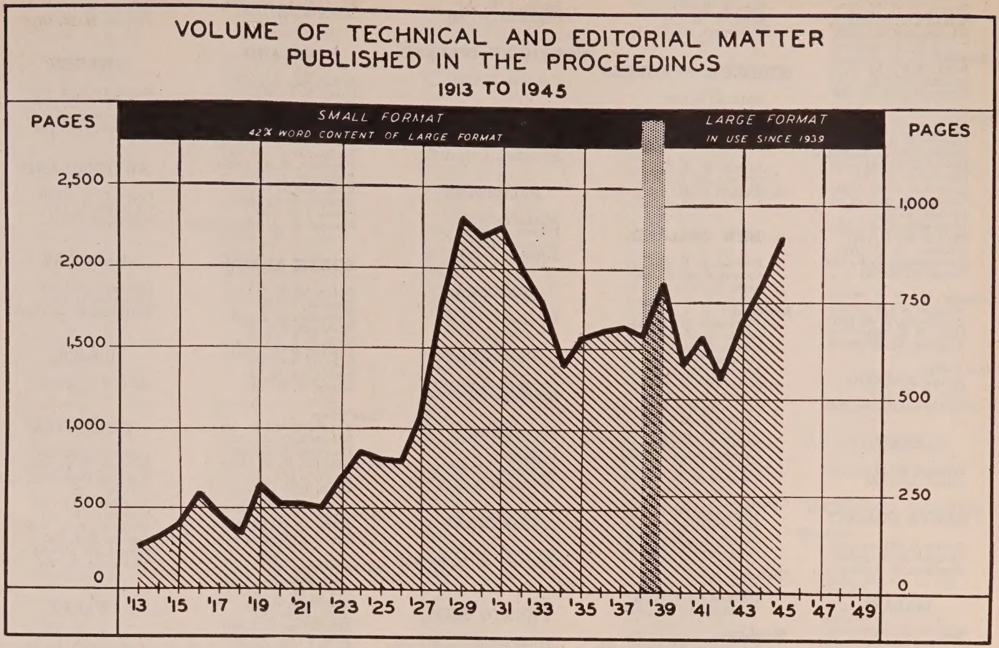
Belov, F. I. (SM)

VENEZUELA

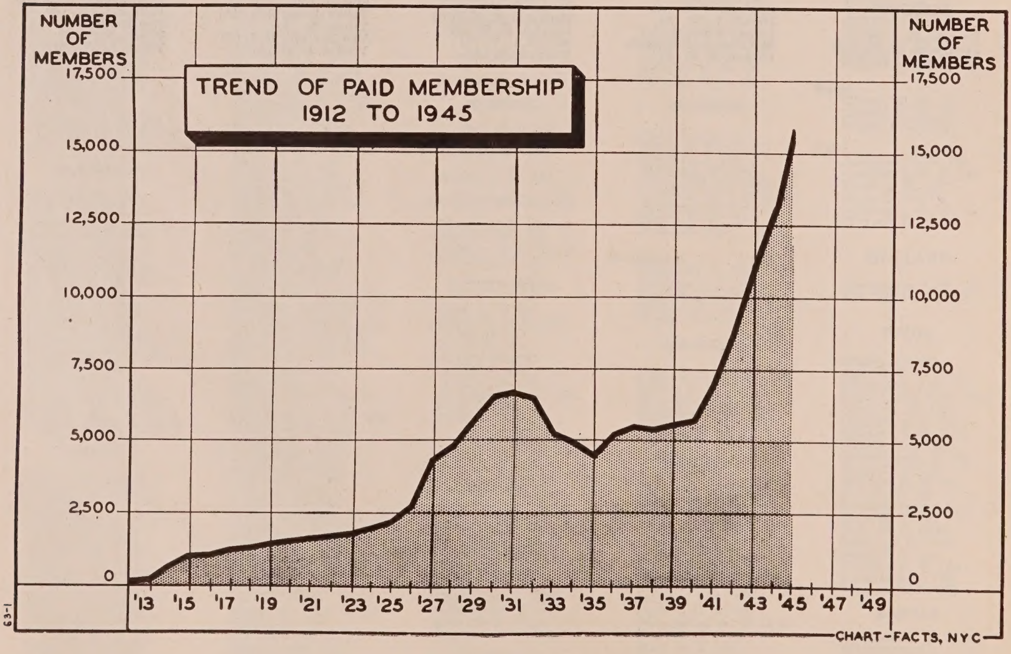
Guitian, J. E. (A)
Hackett, A. H. (M)
Jimenez-Michelena, L. G. (VA)
Morales, D. J. (A)
Morse, D. P. (A)
Pachano, P. I. (VA)
Santos, P. J. (M)
Siblesz, G. M. (A)
Van Dijk, A. (A)

WALES

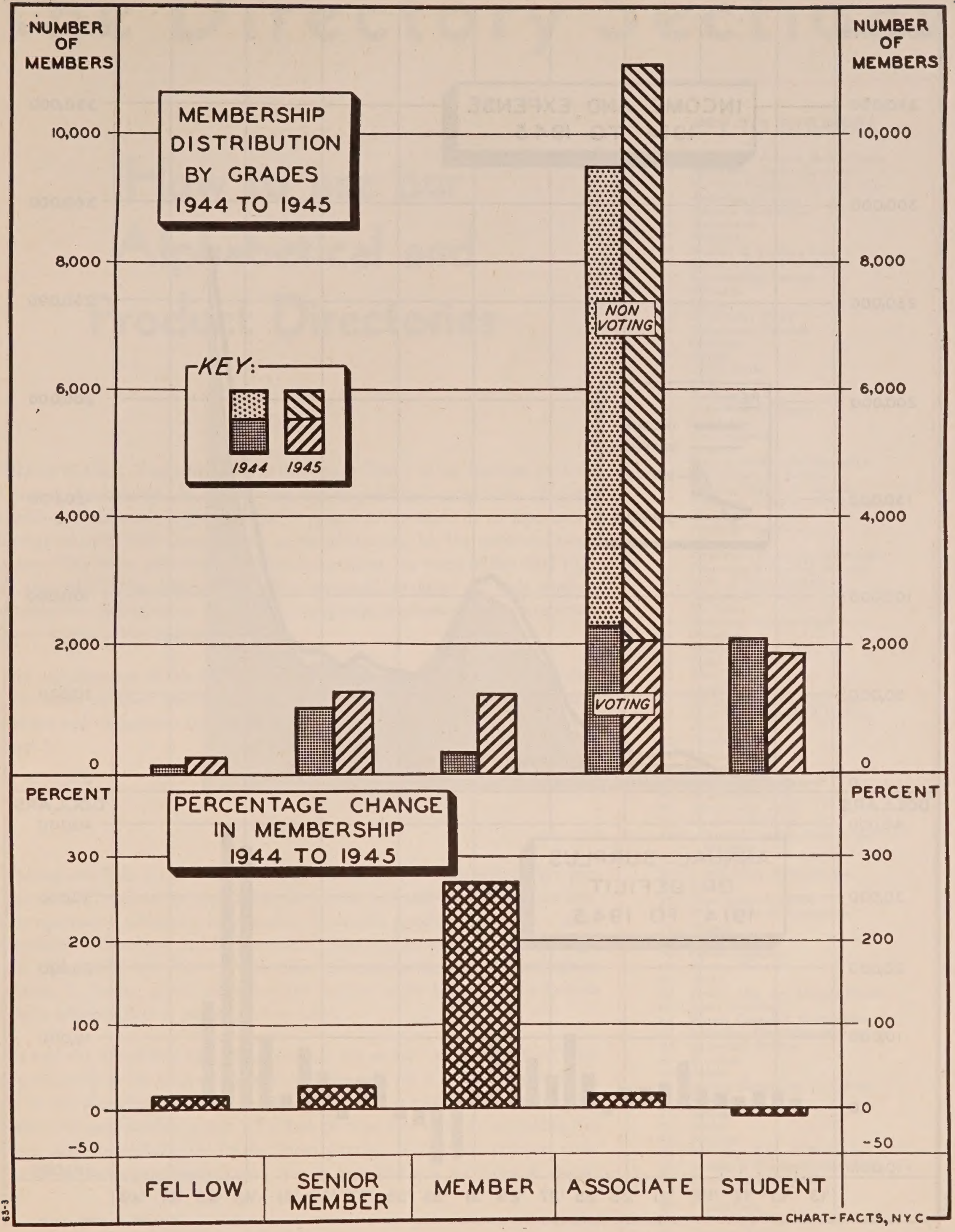
Amis, F. H. (SM)
Anderson, A. G. (A)
De Glanville, R. G. (A)
Phillips, C. W. (A)
Roberts, F. (A)
Welch, A. A. (A)
White, R. W. (A)

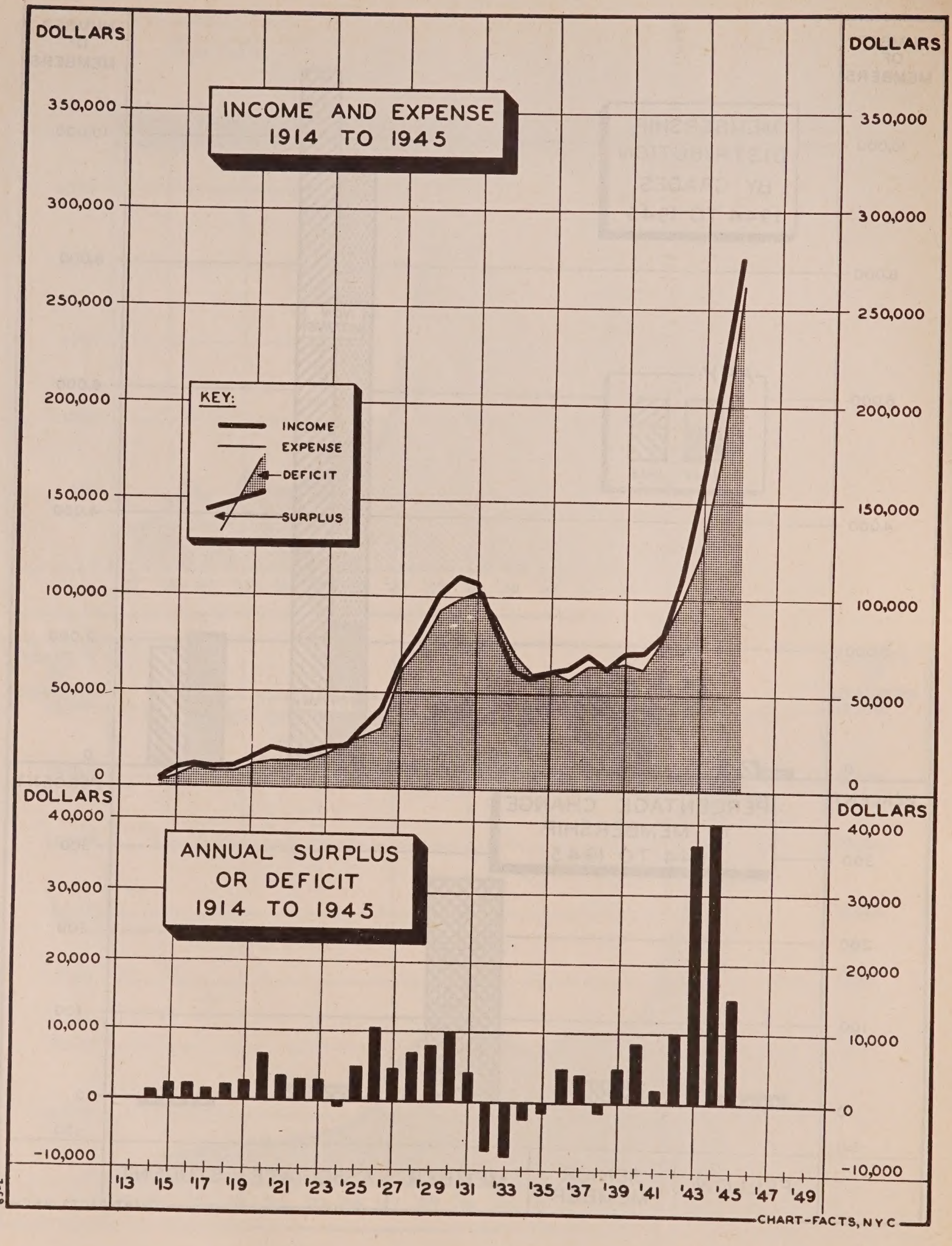


VOLUME OF TECHNICAL AND EDITORIAL MATTER PUBLISHED IN THE PROCEEDINGS
1913 TO 1945



TREND OF PAID MEMBERSHIP
1912 TO 1945


NUMBER OF MEMBERS
MEMBERSHIP DISTRIBUTION BY GRADES 1944 TO 1945
10,000
8,000
6,000
4,000
2,000
0
KEY:
1944
1945
NON VOTING
VOTING
PERCENT
PERCENTAGE CHANGE IN MEMBERSHIP 1944 TO 1945
300
200
100
0
-50
FELLOW
SENIOR MEMBER
MEMBER
ASSOCIATE
STUDENT
63-3
CHART-FACTS, N Y C


DOLLARS
DOLLARS
INCOME AND EXPENSE
1914 TO 1945
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
KEY:
INCOME
EXPENSE
DEFICIT
SURPLUS
DOLLARS
DOLLARS
ANNUAL SURPLUS
OR DEFICIT
1914 TO 1945
40,000
30,000
20,000
10,000
0
-10,000
'13
'15
'17
'19
'21
'23
'25
'27
'29
'31
'33
'35
'37
'39
'41
'43
'45
'47
'49
63-2
CHART-FACTS, NYC

The Directory Sections

How to use our Alphabetical and Product Directories

Part 2

The 1946 I.R.E. Yearbook contains three parts. Part 1 is the Institute of Radio Engineers Membership List, actually the largest published compilation of names of radio and electronic engineers. Part 2 (pages 1A to 96A) is an alphabetical directory of over 3000 firms serving or manufacturing for the radio-electronics industry. This index gives the firm name and address, the name of the chief engineer (preceded by the letters C.E.) where we could obtain it; and code numbers indicating 84 classifications of services, equipment, instruments and component parts as shown in the table to the right.

The completeness of this list depended upon information voluntarily supplied us. Our most vigorous efforts may not have made it complete. We will welcome additions and suggestions for the 1947 edition. (See pages 102-103 for detailed listings.)

Part 3

Throughout Parts 2 and 3 are shown advertisements of firms which have seen in this useful Yearbook an opportunity to provide you with specific product data. These sponsoring companies have made it financially possible to provide a really comprehensive Yearbook to I.R.E. members. Their names are shown in bold type in the alphabetical list (Part 2) with cross reference to the page of their advertisements. In further appreciation for their support is the helpful index to their products which is Part 3, pages 101A to 188A.

To find the advertisers of a given product, let us say "Vacuum Tubes," look this product up in the table to the right and you will see it is classification #80. Turn to this classification in Part 3. (On page 122A is a table showing the page numbers for each product group.) To find all firms known to us as making this product, scan the alphabetical list for those showing #80 in the products code. To locate a particular advertiser's ad, turn to page 188A to the Index to Advertisers.

Please submit all changes, corrections, additions and classification questions to Wm. C. Copp, c/o Proceedings of the I.R.E., 330 West 42nd St., New York 18, N.Y.

KEY TO NUMBERS

1	Aircraft & Airport Radio Equip.
2	Amplifiers, Audio Frequency
3	Antenna Phasing Equip. & Accs.
4	Antennas, all types
5	Antenna Accessories
6	Attenuators
7	Batteries
8	Blowers & Cooling Fans
9	Books & Book Publishers
10	Broadcasting Stations
11	Cabinets
12	Cables
13	Capacitors; Fixed
14	Capacitors; Variable
15	Ceramics
16	Chassis
17	Choke Coils
18	Coils
19	Connectors
20	Consulting Engineers
21	Converters
22	Core Materials
23	Crystals
24	Custom Builders of Equiment
25	Distributors & Jobbers
26	Drafting Equip. & Supplies
27	Electronic Control Equipment
28	Equalizers
29	Facsimile Equipment
30	Filters
31	Frequency Measuring Equipment
32	Frequency Measuring Services
33	Fuses & Fuse Holders
34	Graphic Recorders
35	Hardware
36	Induction Heating Equipment
37	Inductors
38	Insulation
39	Jacks
40	Keys
41	Lacquers
42	Loudspeakers & Headphones
43	Mach'y & Tools for Radio Mfg.
44	Magnets
45	Metals
46	Meters
47	Microphones
48	Monitoring Equipment
49	Motor-Generators
50	Motors, very small
51	Moulded Products
51A.	Optical Screens, Mirrors and Materials
52	Oscillators
53	Oscillographs & Accessories
54	Panels
55	Phonograph Pick-ups
56	Pilot Lights & Assemblies
57	Plastics
58	Plugs
59	Power Supplies
60	Pumps, Vacuum
61	Racks
62	Radar, Also see Aircraft Equip.
63	Radio Receivers
64	Record Changing Mechanisms
65	Recording Equipment & Supplies
66	Recording Services
67	Rectifiers
68	Relays
69	Remote Controlling Equipment
70	Resistors
71	Sockets
72	Solder
73	Switches
74	Technical Schs. & Institutes
75	Testing & Measuring Equipment
76	Transcription Libraries
77	Transformers
78	Transmitters
79	Ultra-High Freq. Accs. & Equip.
80	Vacuum Tubes
81	Vibrators, Power Supply
82	Voltage Regulators
83	Waxes & Sealing Compounds
84	Wire, Copper & Precious Metal

Alphabetical Directory of Manufacturing Firms

A. B. Metal Prods. Ltd. Hatton Wks. Gt. Southwest Rd., Feltham, Middlesex, England, CE—H. S. Payman—73

A. B. C. Prods. Co., 2131 Stoner Ave., W. Los Angeles 25, Calif.—51, 65

ABC Radio Laboratories, 3334 N. New Jersey St., Indianapolis, Ind.—21

ARF Products, 7713 Lake St., River Forest, Chicago, Ill.—62, 63

Abbott Instruments, Inc., 8 W. 18th St., New York 11, N.Y.—63, 78

Acadia Synthetic Prods. Div. Western Felt Wks., 4115 W. Ogden, Chicago 23, Ill.—38

Accurate Insulated Wire Corp., Bx. 13, 25-45 Fox St., New Haven 1, Conn.—12, 84

Accurate Molding Corp., 116 Nassau St., Brooklyn 1, N.Y.—51

Accurate Spring Mfg. Co., 3835 W. Lake St., Chicago 24, Ill. CE-Elling Runden, Jr.,—35, 43

Ace Mfg. Corp., 1239 E. Erie Ave., Philadelphia 24, Pa. CE-E. C. Haeflich—35

Acheson Colloids Corp., 1630 Washington Ave., Port Huron, Mich.—45

Ackerman, Steffan Co., 4532 W. Palmer St., Chicago 39, Ill.—43

Acklin Stamping Co., 1926 Nebraska Ave., Toledo, Ohio—35

Acme Battery Co., 61 Pearl St., B'klyn 1, N.Y.—7

Acme Electric Heating Co., 1217 Washington St., Boston 65, Mass.—43

Acme Electric & Mfg. Co., 44 Water St., Cuba, N.Y. CE—E. A. Miller——17, 18, 77, 82

See our advertisement page 18-A

Acme Folding Box Co., Inc., 141 E. 25th St., New York 10, N.Y. CE—J. L. Greenberg—38

Acme Tool & Die Co., Evansville, Ind.—43

Acme Wire Co., 1255 Dixwell Ave., New Haven 14, Conn. CE—Coils, J. G. Kreis; Wire, K. M. Mackay—18, 84

Acorn Insulated Wire Co., Inc., 225 King St., B'klyn 31, N.Y.—84

Acoustic Equip. Co., 323 Walton Bldg., Atlanta 3, Ga. CE—P. C. Bangs—66

Acro Electric Co., 1316 Superior Ave., Cleveland 14, Ohio—73

Acro Tool & Die Works, 4554 B'way, Chicago 40, Ill. CE—A. J. Farkas—16, 35, 43

Acromark Co., 13 Morrell St., Elizabeth 4, N.J. CE—W. A. Heine Jr.—24, 35, 43

H. W. Acton Co., Inc., 370 7th Ave., New York 1, N.Y.—65

Adams Labs. Inc., 525 W. 52nd St., New York 19, N.Y.—27

Adams & Westlake Co., Elkhart, Ind. CE—A. T. Hagerty—68

Addison Industries Ltd., 187 Geary Ave., Toronto 4, Ont., Canada—25

Adel Precision Prods. Corp., Burbank, Calif.; Huntington, W.Va—35, 43

Adler Mfg Co., 2903 W. Chestnut St., Louisville 11, Ky.—11

Admak Mfg. Co., 44-46 Cordier St., Irvington 11, N.J. CE—E. Ardolina—80

Admiral Corp., 3800 Cortland, Chicago 47, Ill. CE—Kenneth Turner—63, 64

Adrem Co., 143 Newberry St., Boston 16, Mass.—75

Advance Electric & Relay Co., 1260 W. 2nd St., Los Angeles 26, Calif. CE—Van Huckabee—68

Advance Recording Prods. Co., 36-12 34th St., Long Island City, N.Y.—65

Advance Solvents & Chemical Corp., 245 5th Ave., New York 16, N.Y.—22

Advance Transformer Co., 14 N. May St., Chicago 7, Ill.—77

Aero Communications, Inc., 231 Main St., Hempstead, L.I., N.Y.—4

Aero Electric Corp., 6916 Romain St., Los Angeles 38, Calif. CE—R. H. Townsend—19

Aero Prods. Magazine, Rm 602, 271 Madison Ave., New York 16, N.Y.—9

Aerolux Light Corp., 653 11th Ave., New York 19, N.Y.—75, 82

Aeronautical Radio Mfg. Co., Roosevelt Fld., Mineola, L.I., N.Y.—4, 38

Aeronics, Inc., 132 Nassau St., New York 7, N.Y. CE—E. Sieminski—4, 63, 78

Aeroquipment Ltd., 1732 Notre Dame St. W., Montreal 3, Canada CE—W. H. Coates—15, 24, 35, 36, 38, 57

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass. CE—Stanley Green—13, 30, 70, 75

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Agricultural B'casting Co., 1230 W. Washington Blvd., Chicago 7, Ill.—10

Bruno H. Ahlers, 8524 89th St., Woodhaven, L.I., N.Y.—68

Aiken & McCutcheon, 75 West St., New York 6, N.Y.—20

Air Associates, Inc., Teterboro, N.J.—80

Air Associates, Radio Div., 5827 W. Century Blvd., Los Angeles 43, Calif. CE—J. A. Rhoads—1

Air Communications, Inc., 2233 Grand Ave., Kansas City 8, Mo.—63, 78

Air King Prods. Co., Inc., 1523 63d St., B'klyn 19, N.Y. CE—Frank A. Hinners—63

Air Reduction Corp., 60 E. 42nd St., New York 17, N.Y.—43

Air-Way Electric Appliance Corp., 2101 Auburn Ave., Toledo 1, Ohio. CE—F. H. Burmeister; C. A. Lindberg—49, 50

Airadio Inc., Melrose Ave & Barry Pl., Stamford, Conn. CE—D. S. Basim—16, 62, 63, 75, 78, 79

Airadio Metal Industries, 19 Bryant Ave., Roslyn, N.Y.—35

Aircraft Accessories Corp., Electronic Div., Kansas City, Kansas—23

Aircraft-Marine Corp., 286 Broad St., Elizabeth, N.J.—35

Aircraft Marine Products, Inc., 1521-1573 N. 4th St., Harrisburg, Pa. CE—V. E. Carlson—13, 19, 35

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Aircraft Prods., Ft. Wayne, Ind.—12, 19

Aircraft Radio Corp., Boonton, N.J. CE—F. H. Drake—1, 13, 14, 17, 19, 24, 35, 39, 52, 58, 61, 63, 68, 73, 77, 78

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Airdesign & Fabrication Inc., 241 Fairfield Ave., Upper Darby, Pa.—2, 17, 30, 77

Aireon Mfg. Corp., Plant 5, Funston & Fairfax Rds., Kansas City 15, Kansas CE—Chas. L. Ohmer—1, 4, 11, 23, 27, 42, 55, 62, 63, 64, 73, 78, 80

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AiResearch Mfg. Co., 9851 Sepulveda Blvd., Los Angeles 43, Calif.—19

Airplane & Marine Inst., Inc., Bx. 92, Clearfield, Pa. CE—W. M. Diehl—1, 2, 4, 11, 16, 27, 52, 54, 63, 75, 78

Airtronic Mfg. Co., 5145 W. San Fernando Rd., Los Angeles 26, Calif. CE—V. Elconin—36

Ajax Electrothermic Corp., Ajax Park, Trenton, N.J.—36

Akron Porcelain Co., Cory Ave., Akron 3, Ohio—38

Aladdin Radio Industries, Inc., 501 W. 35th St., Chicago 16, Ill.—18, 77

Albion Coil Co., Albion, Ill.—18

Albion Service Corp., Pty. Ltd., 17 O'Connell St., Brook House, Sydney, NSW, Australia CE—V. H. Dudman—14, 20, 27, 68

Albuquerque B'casting Co., Albuquerque, N.M.—10

Alco Valve Co., 865 Kingsland Ave., St. Louis 5, Mo.—27

Alden Products Co., 117 N. Main St., Brockton 64D, Mass. CE—A. D. Macleod—12, 15, 19, 20, 24, 29, 33, 34, 35, 39, 40, 51, 52, 56, 58, 59, 71, 75, 84

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Alex Radio Lab., 1701 W. 25th St., Cleveland 13, Ohio—25

All-American Cables & Radio, Inc., 67 Broad St., New York 4, N.Y. (Div. of IT & T)—10

All American Tool & Mfg. Co., 1014 W. Fullerton Ave., Chicago 14, Ill.—75

All Steel Equip. Co., Aurora, Ill.—43

All Weather Springs, 140 Cedar St., New York 6, N.Y.—35

Allegheny Ludlum Steel Corp., Oliver Bldg., Breckenridge, Pa. CE—L. C. Hicks—22, 44, 45

L. B. Allen Co., Inc., 6730 Bryn Mawr Ave., Chicago 31, Ill.—72

Allen-Bradley Co., 114 W. Greenfield Ave., Milwaukee 4, Wis. CE—G. O. Wilms—6, 44, 56, 68, 70, 73

Allen Electric & Equip. Co., 2101 N. Pitcher St., Kalamazoo 13F, Mich. CE—Lee Parmeter—75

Allen Mfg. Co., 133 Sheldon St., Hartford 5, Conn.—35

Alliance Mfg. Co., Lake Park Blvd., Alliance, Ohio CE—E. V. Schneider; AE—M. M. McKearney—50, 65

Allied Asphalt & Mineral Corp., 217 B'way, New York 7, N.Y.—83

Allied B'casting Co. (CKWS), Whig-Standard Bldg., Kingston, Ont., Can. CE—B. A. Coy—10

Allied Control Co., Inc., 2 East End Ave., New York 21, N.Y. CE—K. G. Chichester—27, 68, 73

Allied Engineering Institute, Bx. 207, Church St. Annex, New York, N.Y.—20

Allied Radio Corp., Dept. 3-46, 833 W. Jackson Blvd., Chicago 7, Ill. CE—L. M. Dezettel—2, 12-14, 17, 21, 25, 33, 46,

(Continued on page 6A)

Only with Westinghouse can you gain the full benefit of this mark of greater dependability

more supervisory controls than any other type of transmitter . . .

Your job is easier because Westinghouse transmitter controls include everything from one master switch to a complete indicator lamp system. And the soundness of Westinghouse design is backed by more experience in actual station operation than any other manufacturer. Write today for the full story. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

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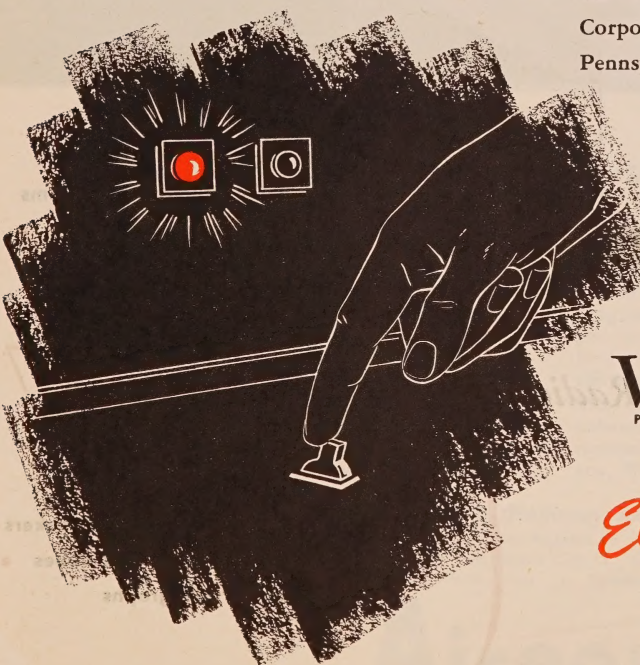

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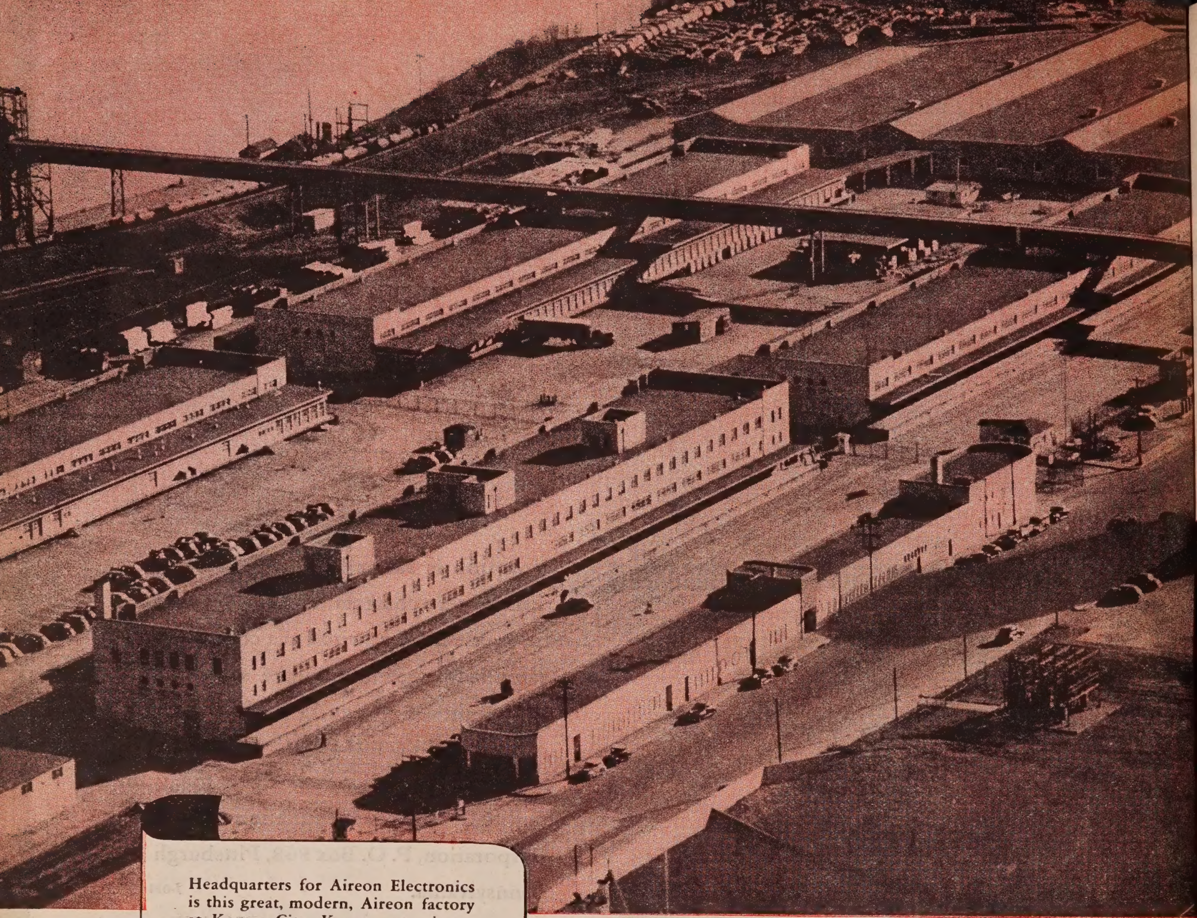

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Railroad Radio Communications Systems • Ground Radio Station Equipment • Emergency Radio Equipment • Speakers

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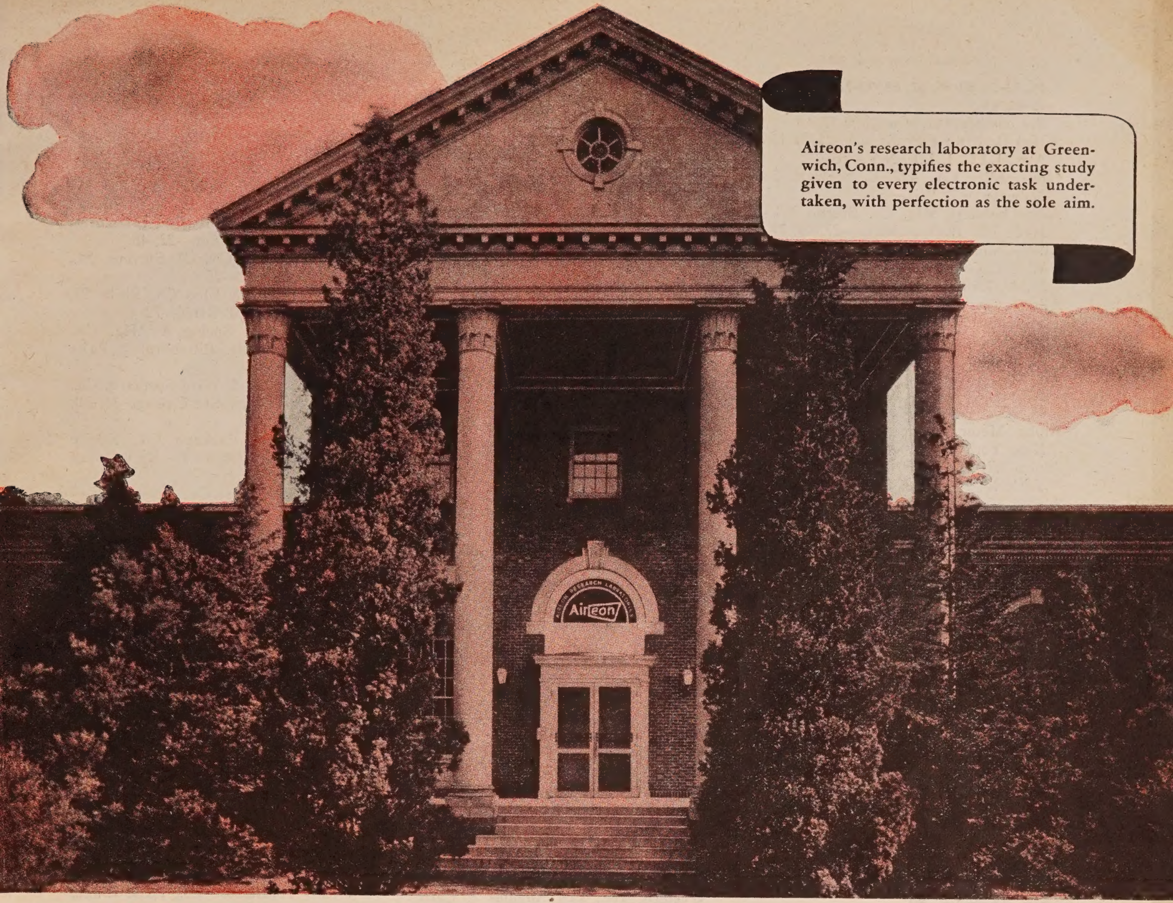

Aireon's research laboratory at Greenwich, Conn., typifies the exacting study given to every electronic task undertaken, with perfection as the sole aim.

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In addition to the production facilities shown on the opposite page, Aireon maintains ultra-modern laboratories for research and development at Greenwich, Connecticut, and Pasadena, California and for production engineering at Kansas City. These laboratories, staffed and equipped to handle a wide range of electronic and mechanical problems, set the high standard for Aireon products.

These facilities are also available for "joint-research" on your own problems. If you want a speaker or vacuum tube for a special application, if you want magnetic or photo-electric process control to speed production in your factory, it will pay you to consult with an Aireon engineer about our "joint-research" program. Regardless of the exact nature of your industry, electronic process control may be the answer to simplification and greater efficiency of operation in your plant.

The Aireon Industrial Electronic Research Laboratory will be glad to have an engineering representative discuss your requirements with you. We invite your inquiry.

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Research Laboratories: Greenwich, Conn. • Pasadena, Calif. • Kansas City

Aireon

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Allied Recording Prods. Co., 21-09 43rd Ave., L.I.C. 1, L.I., N.Y.—65

Louis Allis Co., 427 E. Stewart St., Milwaukee 7, Wis.—50

Allis-Chalmers Mfg. Co. Boston Wks., Hyde Pk., Boston, Mass.—27, 49, 77

Allis Chalmers Mfg. Co., Milwaukee 1, Wis. CE—Edwin H. Brown—21, 27, 36, 49, 77, 82

Allmetal Screw Prods. Co., 80 Grand St., New York 13, N.Y.—35

Alloy Metal Wire Co., 420 Lexington Ave., New York 17, N.Y.—84

Alpha Metals, Inc., 363 Hudson Ave., B'klyn 1, N.Y. CE—H. Shonberg—45, 72

Alpha Meter Service, 71 Nassau St., New York 7, N.Y.—46

Alpha Wire Corp., 50 Howard St., New York 13, N.Y.—38, 84

Alrose Chemical Co., Cranston, R.I.—45

Altec-Lansing Corp., 1680 N. Vine St., Hollywood 28, Calif. CE—J. K. Hilliard—2, 17, 28, 30, 42, 59, 61, 75, 77

Theodore Alteneder Co., 1217 Spring Garden St., Philadelphia 23, Pa.—26

Aluminum Co. of Amer., Oliver Bldg., 537 Smithfield St., Pittsburgh 22, Pa.—45

Aluminum Finishing Corp., Indianapolis, Ind.—45

Aluminum Goods Mfg. Co., Manitowoc, Wis.—11, 16, 54

Amalgamated Electronics Associated, 70 E. 42nd St., New York 17, N.Y.—70

Amalgamated Radio Tel. Corp., 476 B'way, New York 13, N.Y.—35, 56, 71

Amalgamated Wireless Ltd., Ashfield, NSW, Australia—10, 63, 66, 78

Amalgamated Wireless Valve Co. Pty. Ltd., GPO Bx. 2516, 47 York St., Sydney, Australia—80

Ambroid Co. Inc., 305 Franklin St., Boston 10, Mass. CE—C. W. Taylor—41

Ameco, 37 E. 18th St., New York 3, N.Y.—75, 79

American Amplifier & Tel. Co., 1222 Glendon Ave., Los Angeles 24, Calif.—47

American Appraisal Co., 525 E. Michigan St., Milwaukee 2, Wis.—20

American Askania Corp., 826 Merchants & Mfgrs. Bldg., Houston, Tex.—27

American Battery Co., 17 S. Jefferson St., Chicago 6, Ill.—7

American Brass Co., Amer. Metal Hose Br., 698 S. Main St., Waterbury 88, Conn. CE—E. T. Candee—5, 12, 38, 45, 51, 84

American Bridge Co., Frick Bldg., Pittsburgh 19, Pa.—4

American B'casting Co., 30 Rockefeller Pl., New York 20, N.Y.—10

American Chain & Cable Co. Inc., 929 Conn. Ave., Bridgeport, Conn.—84

American Coil & Eng. Co., 1271 N. Hermitage Ave., Chicago 22, Ill. CE—James Elliott—4, 17, 18, 77

American Coil Spring Co., 2034 Keating Ave., Muskegon, Mich.—35

American Coils Co., 25-27 Lexington St., Newark 5, N.J.—18

American Communications Corp., 306 B'way, New York 7, N.Y.—2, 18

American Condenser Co., 4410 Ravenswood Ave., Chicago 40, Ill. CE—H. C. Kreinick—13

American Cyanamid Co. Plastics Div., 30 Rockefeller Pl., New York 20, N.Y.—11, 51

American District Telegraph Co., 157 6th Ave., New York 13, N.Y. CE—Paul M. Farmer—10, 27

American Electric Cable Co., Holyoke, Mass.—84

American Electric Fusion Corp. 2610 W. Diversey St., Chicago 47, Ill.—43

American Electrical Heater Co., 6110 Cass Ave., Detroit 2, Mich. CE—L. H. Thomas—43, 72

American Electrometal Corp., 320 Yonkers Ave., Yonkers, N.Y.—22, 35

American Emblem Co., Utica, N.Y.—35

American Felt Co., Glenville, Conn.—35, 38

American Gas Accumulator Co., 1027 Newark Ave., Elizabeth 3, N.J.—68

American Instrument Co., 8010 Georgia Ave., Silver Spring, Md.—68, 70, 75

American Insulated Wire Co., 610 Manton Ave., Providence 9, R.I.—84

American Insulator Corp., New Freedom, Pa. CE—B. F. Hantz—38, 51

American Jewels Corp., Attleboro, Mass.—23

American Lava Corp., Chattanooga 5, Tenn. GM—R. L. Bicknell—15, 38, 51
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American Lens Co., Inc., 45 Lispenard St., New York 13, N.Y. CE—Newton Cello—43, 51A

American Machine & Metals, East Moline, Ill.—43

American Magnesium Corp., 2210 Harvard Ave., Cleveland 5, Ohio—45

American Metal Prods. Co., 315 Berry St., B'klyn 11, N.Y.—58, 71

American Microphone Co., Inc., 1950 S. Western Ave., Los Angeles 7, Calif. CE—H. Hornickel—47, 55

American Molding Powder & Chem. Corp., 109 S. 5th St., B'klyn 11, N.Y.—51

American Nut & Bolt Fastener Co., 2029 Doerr St., Pittsburgh 12, Pa.—35

American Optical Co., 143 Bidwell Pky., Buffalo 11, N.Y. CE—James E. Robinson—43, 51A

American Paper Tubing Co., Hazel St., Woonsocket, R.I.—43

American Pencil Co., 504 Willow Ave., Hoboken, N.J.—26

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill. CE—H. Z. Benton—4, 5, 12, 15, 19, 38, 51, 57, 71, 73
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American Photocopy Equip. Co., 2849 N. Clark St., Chicago 14, Ill. CE—Joseph Delacy—26, 29

American Platinum Wks., 231 NJRR Ave. at Oliver St., Newark 5, N.J. SM—J. C. Wilcox—45

American Prods. Mfg. Co., 8131 Oleander St. & Dublin St., New Orleans 18, La. CE—R. C. Harter—41, 83

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. CE—James Ruel—1-4, 10, 24, 27, 46, 52, 59, 63, 67, 75, 78, 82
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American Radio Hardware Co., Inc., 1524 MacQuesten Pkwy. S., Mt. Vernon, N.Y.—35, 43

American Radio Institute, 88 Columbus Ave., New York 23, N.Y.—74

American Radio Lab., 6321 S. University, Chicago 37, Ill.—24

American Recordgraph Corp., 333 W. 52nd St., New York 19, N.Y.—65

American Rolling Mills Co., 141 Curtis St., Middletown, Ohio—22, 45

American Screw Co., 21 Stevens St., Providence, R.I.—35

American Solder & Flux Co., Phila. 25, Pa. CE—F. D. McBride—72

American Spiral Spring & Mfg. Co., 5528 Harrison St., Pittsburgh 1, Pa.—35

American Spring & Wire Specialty Co., 816 N. Spaulding St., Chicago 51, Ill.—35

American Steel Package Co., Squire Ave., Defiance, Ohio CE—K. A. Duerk—14

American Steel Wire Co., Donora, Pa.—84

American Steel & Wire Co., Rockefeller Bldg., Cleveland 13, Ohio CE—T. F. Peterson—12, 35, 84

American Tel. & Tel. Co., 195 B'way, New York 7, N.Y. CE—H. S. Osborne—10

American Television Labs., 433 E. Erie, Chicago 11, Ill.—63, 80

American Television Labs. of Calif., Inc., 5612-20 Sunset Blvd., Hollywood 28, Calif.—74

American Telev. & Radio Co., 300 E. 4th St., St. Paul 1, Minn. CE—Albert A. Goffstein—59, 67, 77, 81
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American Thermo-Electric Co., 69 E. 8th St., New York 3, N.Y.—75

American Time Prods., Inc., 580 5th Ave., New York 19, N.Y. CE—J. N. Heed—27, 31, 75

American Totalisator Co., Park Ridge, Ill.—27

American Transformer Co., 178 Emmet St., Newark 5, N.J. CE—John F. Harris—17, 59, 77, 82
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American Type Founders, Inc., Remote Control Div., 11 W. 42nd St., New York 18, N.Y.—65, 69

Amglo Corp., 4234 Lincoln Ave., Chicago 18, Ill.—50

Amperex Electronic Corp., 79 Washington St., B'klyn 1, N.Y. CE—A. Lenauke—80

Amperite Co., 561 B'way, New York 12, N.Y. CE—S. Ruttenberg—47, 68, 70, 82
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Amplex Engineering, Inc., 1620 Grand Ave., New Castle, Ind.—5

Amplifier Co. of America, 398 B'way, New York 13, N.Y. CE—A. C. Shaney—2, 17, 20, 24, 27, 30, 37, 52, 59, 77, 82

Am-plus Storage Battery Co., 425 W. Superior St., Chicago 10, Ill.—7

Ampro Co., 2851 N. Western Ave., Chicago 18, Ill.—2

Amy, Aceves & King, Inc., 13 W. 42nd St., New York 18, N.Y. CE—J. G. Aceves—20

Anaconda Wire & Cable Co., 25 B'way,

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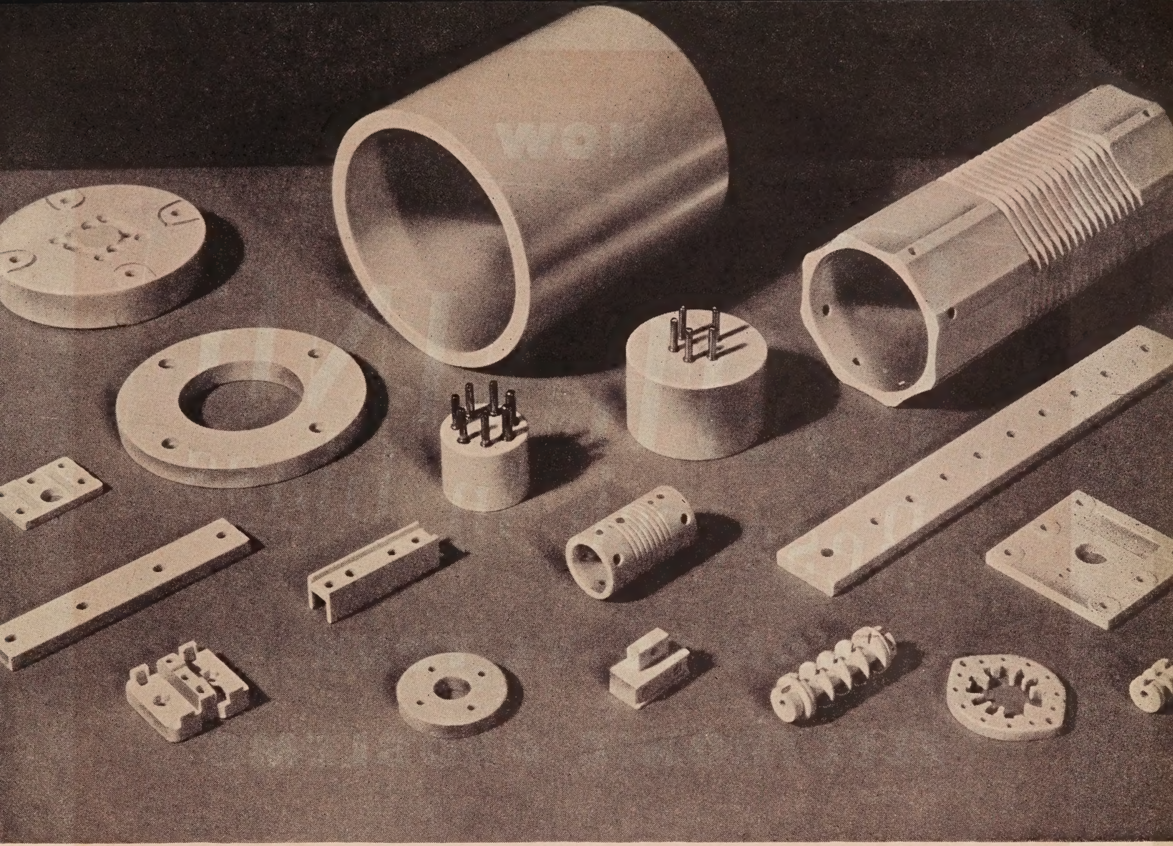

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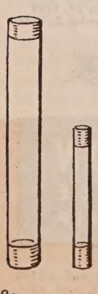

1 **METALLIZED TUBES** for capacitors, resistors, etc. They can be soldered into place to form permanent hermetic seals. Three times the strength of ordinary glass. Withstand thermal shock up to 275°C.—spot heat to ice water. High surface and volume resistivity. 20 standard sizes ½″ x 2″ to 2″ x 1¼″.

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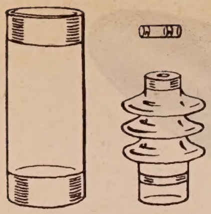
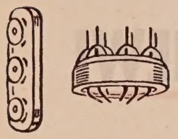
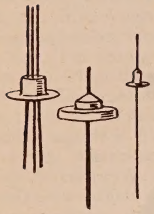


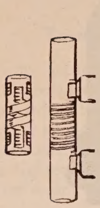
2 METALLIZED BUSHINGS both tubular and skirted. They also form permanent hermetic seals when soldered into place. High voltage rating, high volume and surface resistivity. High dielectric strength. Strong. Resist corrosion and weathering. Many standard sizes available for immediate shipment.



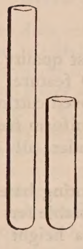
3 HEADERS for those hard-to-wire places in the new small electronic devices. Available either with or without metallizing. Economical of time, space, labor, for with them you can get a number of leads into small space. Good mechanical, chemical and electrical properties. Available quickly in quantities.



4 EYELET TERMINALS. To carry one or more leads through small openings. The wires pass through tiny glass beads surrounded by metal collars which can be quickly soldered into place. Resist thermal shock, surface contamination and weathering. Standard items readily produced in quantity.



5 COIL FORMS. Grooved for ordinary frequencies. Metallized for modern high frequencies. Low loss factor. The glass surface resists surface contamination, is unaffected by weathering and is chemically stable. Constant electrical properties. Available with terminals and mounting fixtures.



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7 AND IN ADDITION — CORNING OFFERS YOU THESE FOUR SPECIAL ENGINEERING SERVICES!

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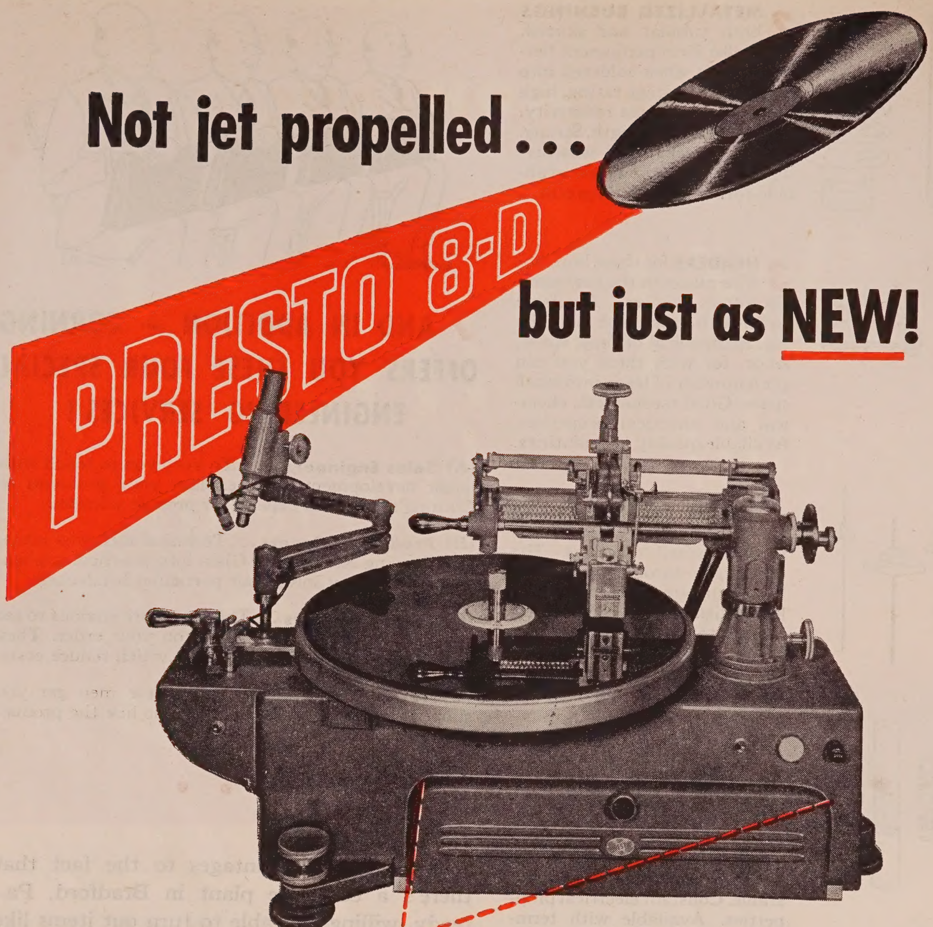

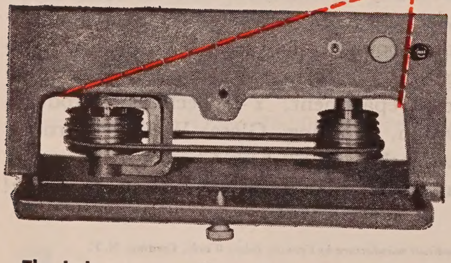

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of the Presto 8-D Recording Turntable

Standard Equipment

The 8-D recorder includes a turntable, rim drive system, and overhead cutting mechanism, mounted on a cast iron base. The cutting mechanism includes the 1-C high fidelity cutting head, 15-B spiralling feedscrew, 20-A time scale, 170-B vertical damper, and 160-A automatic equalizer. Also included are the 125-A miscroscope and 150-C pickup. Accessories necessary to operate the 8-D table include recording amplifiers, microphones, discs and needles.

Turntable

Cast iron, accurately machined and dynamically balanced, weight 20 pounds, having a hardened steel shaft which revolves on a single ball bearing at the base of a bronze shaft well. Provision is made for tightening the bearing to compensate for wear.

Drive System

A heavy duty, self-starting synchronous motor, 1/25th hp, applies power to the inside rim of the turntable through a steel step pulley and two rubber idler wheels, one of which is engaged at 78 rpm and the other at 33⅓ rpm. The speed shift lever operates the motor switch for starting and stopping the motor, and selects the speed at which the table operates. Provision is made for locking the speed shift lever in place. Adjustable stops regulate the travel of the speed shift lever to maintain a constant pressure against the idler wheels.

Mounting Base

Cast iron, weight 60 pounds, provided with three adjustable mounting feet for leveling the turntable.

Cutter Feed Mechanism

Consists of a heavy machined, stainless steel guide bar mounted on the turntable base. Provision is made for swinging the entire mechanism from the recording position to the rear to clear the turntable for changing records. The feedscrew is driven through a belt and pulley system, operated from the turntable shaft and a worm and gear in the housing of the cutter mechanism mounting. The spiralling attachment makes it possible to space grooves up to ½″ apart at convenient crank speeds. A four-sided time scale shows elapsed recording time at four commonly used pitches in the range between 96 and 136 lines per inch.

Cutting Head Carriage

The cutting head is mounted on an apron, hinged to permit a rough adjustment of the cutting angle. This adjustment is locked by means of a thumbscrew. Fine adjustment of the cutting angle is made by raising or lowering the cutting head carriage by means of a large thumbscrew at the top of the carriage. The cutting head may be swung outward to a horizontal position to change cutting needles and may be replaced in cutting position without disturbing the cutting angle. Levers are provided for lowering the cutting needle gently on the disc and for engaging the cutting head carriage with the feedscrew. A vertical damper is mounted on a rocker arm beneath the carriage. The same feedscrew is used for cutting at all pitches. The depth of cut is adjusted by a counterbalance spring at the side of the cutting head.

Microscope

Magnification 40 power, area in focus, 7 grooves, equipped with rigid cast iron mounting bracket and a special lamp for illumination.

Finish

Metal parts of the 8-D equipment are finished in gray crackle enamel with chromium trim.

Frequency Response

Cutting head 50 to 8000 cycles, pickup 70 to 7500 cycles.

Noise Level

Mechanical noise originating in equipment over 40 db below maximum useful sound level reproduced from recordings.

Impedances

Cutting head 500 ohms, pickup 500 ohms.

Pitch

Adjustable to cut 96, 104, 112, 120 or 136 lines an inch, inside-out. A replacement feedscrew required to cut at all the above pitches from outside-in can be furnished at the purchaser's option.

Speed Accuracy

Within 0.5% at both 78 and 33⅓ rpm, regulation within a single revolution accurate to 0.25%.

Power Requirements

Turntable motor draws 100 watts from a 110 volt, 60 cycle line, available for 50 cycles or 220 volts at additional charge.

Operating Clearances

Overall clearance necessary for operating the 8-D turntable 31″ lg x 18″ d x 19¼″ h (79 x 46 x 49 cm.).

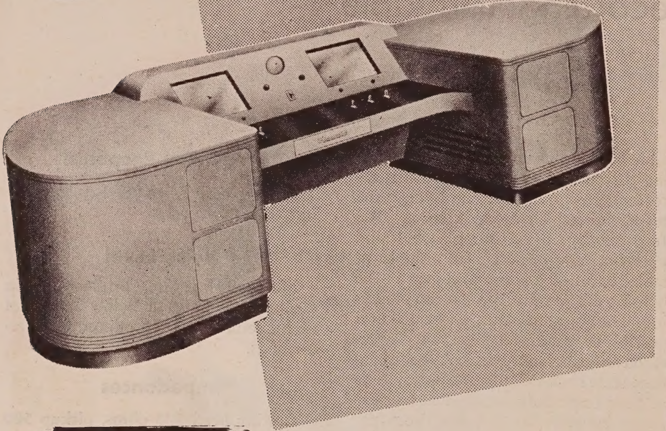
Shipping Dimensions and Weights

Case No. 1 contains the 8-D Recorder, less idler wheels and microscope; measures 36″ x 23″ x 24″ (91 x 58 x 61 cm.); weight 153 lbs. (69 kg.).

Case No. 2 contains turntable, microscope, idlers, stroboscope and dash pot fluid; measures 24″ x 24″ x 12″ (61 x 61 x 30 cm.); weight 45 lbs. (20 kg.).

Sherron Electronics

TELEVISION



We Design

We Develop

We Manufacture

Television-FM-Transmitters and Studio Controls and Monitors

Over a period of years, we have worked with some of America's outstanding manufacturers on equipment employing video amplifiers, cathode ray tubes, oscilloscope controls and circuits allied to television. Men who have earned recognition as experts are the mainstay of our organization, assisted by thoroughly experienced associates. Our knowledge and skills, therefore, are of a specific nature—fitted to the needs and problems of the television industry. The degree of our specialization is highlighted in the operation of our own experimental Television Station W2XDK. Here it is our purpose to subject the equipment we produce to a final, functional test.

We offer to the television industry a complete service—from design to fabrication—in the production of the following, according to individual requirements and specifications:

- TELEVISION TRANSMITTERS Video and Aural
- FM TRANSMITTERS
- STUDIO CONTROL DESKS
- MASTER CONTROL BOARD
- TRANSMITTER CONTROL DESK
- COMPLETE AUDIO CONTROL AND
- MONITORING EQUIPMENT

Sherron Electronics W2XDK

SHERRON ELECTRONICS CO.

Division of Sherron Metallic Corp.

1201 Flushing Avenue, Brooklyn 6, N.Y.

(Continued from page 6A)

New York 4, N.Y. CE—L. F. Hickernell—12, 84

Anchor Plastics Co., 533 Canal St., New York 13, N.Y.—51, 57

Anchor Radio Distributing Service Co., Bx. 21, Ithaca, N.Y.—25

Anchor Webbing Co., 1005 Main St., Pawtucket, R.I.—38

Anco Prods. Co., Paterson, N.J.—50

An-cor-lox Div. Laminated Shin Co., Union St., Glenbrook, Conn.—35

C. J. Anderson & Co., 212 W. Austin Ave., Chicago 44, Ill.—44, 68

Andrea Radio Corp., 43-20 24th St., L.I.C. 1, N.Y. CE—Harold J. Heindel—63, 64, 68

Andrew Co., 363 E. 75th St., Chicago 19, Ill. CE—C. Russell Cox—3-5, 12, 20, 48, 75
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Andrews & Perillo Mfg. Co., 39-30 Crescent St., L.I.C. 1, N.Y.—27

R. B. Annis Co., 1101 N. Delaware St., Indianapolis 2, Ind. CE—R. B. Annis—20, 34, 43, 44, 77

Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N.J. CE—Kenneth Decker—63

Ansonia Clock Co., Inc., 103 Lafayette St., New York 13, N.Y. CE—E. Cantelo White—35, 54

Ansonia Electrical Co., Ansonia, Conn.—12, 84

Earle C. Anthony, Inc., 141 N. Vermont, Los Angeles 4, Calif.—10

Apex Electric Mfg. Co., 1070 E. 152nd St., Cleveland 10, Ohio—49

Apollo Metal Wks., 6666 S. Oak Park Ave., Chicago 38, Ill.—45

Applied Research Labs., 4336 San Fernando Rd., Glendale 4, Calif. CE—R. W. Lindhurst—24

Aray Mfg. & Supply Co., Inc., 3107 Pine St., St. Louis 3, Mo.—12, 18, 77

Arco Co., 7301 Bessemer Ave., Cleveland 4, Ohio—41, 83

Arcturus Radio Tube Co., 720 Frelinghuysen Ave., Newark 5, N.J.—80

Ardente Acoustic Labs., Ltd., Guilford, Surrey, England CE—W. P. Hickson—2, 31, 42, 47

Arens Controls, Inc., 2253 S. Halsted, Chicago 8, Ill.—38

Argus, Inc., 4 Williams St., Ann Arbor, Mich. CE—Curtis Adams—24

Ark-Les Switch Corp., 51 Water St., Watertown, Mass. CE—Hugh W. Batcheller—73

Arkwright Finishing Co., Turkshead Bldg., Providence, R.I.—26

Arlavox Mfg. Co., 411 S. Sangamon, Chicago 7, Ill.—45

Arma Corp., 254 36th St., B'klyn 32, N.Y.—50

Armature Coil Equip., Inc., 2605 Vega Ave., Cleveland 3, Ohio—43

Armour Research Foundation, Part of Illinois Institute of Technology, 36-A W. 33rd St., Chicago 16, Ill.—20

Edwin H. Armstrong, 206 Philosophy Hall, Columbia University, New York 27, N.Y.—20

Armstrong Cork Co., Lancaster, Pa., CE—G. A. Reinhard, Jr.—38, 43

Arnessen Electric Co., 116 Broad St.,

(Continued on page 16A)

Molded Socket
Transformer
Radio Coil
Switch
Condenser
Electronic Tubes

HOW MYCALEX BUILDS BETTER PEACETIME PRODUCTS

As high frequency insulating standards become more exacting, the more apparent become the many advantages of MYCALEX over other types of materials . . . in building improved performance into electronic apparatus.

For 27 years MYCALEX has been known as "the most nearly perfect" insulation. Today *improved* MYCALEX demonstrates its superior properties wherever low loss factor and high dielectric strength are important . . . where resistance to arcing and high temperatures is desired . . . where imperviousness to oil and water must be virtually 100%.

New advancements in the molding of MYCALEX now make available the production of a wide variety of parts with metal inserts or electrodes molded in to create a positive seal.

It pays to become familiar with the physical and electrical properties of all three types of MYCALEX — MYCALEX 400, MYCALEX K and MYCALEX 410 (MOLDED). Our engineers invite your inquiries on all insulating problems.

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Ceramics

The experience earned in producing millions of Ceramic parts for the industry is at your disposal.

Centralab is equipped to furnish coil forms up to 5 inches in diameter and pressed pieces to approximately 6 inches square. Write for bulletin 720.

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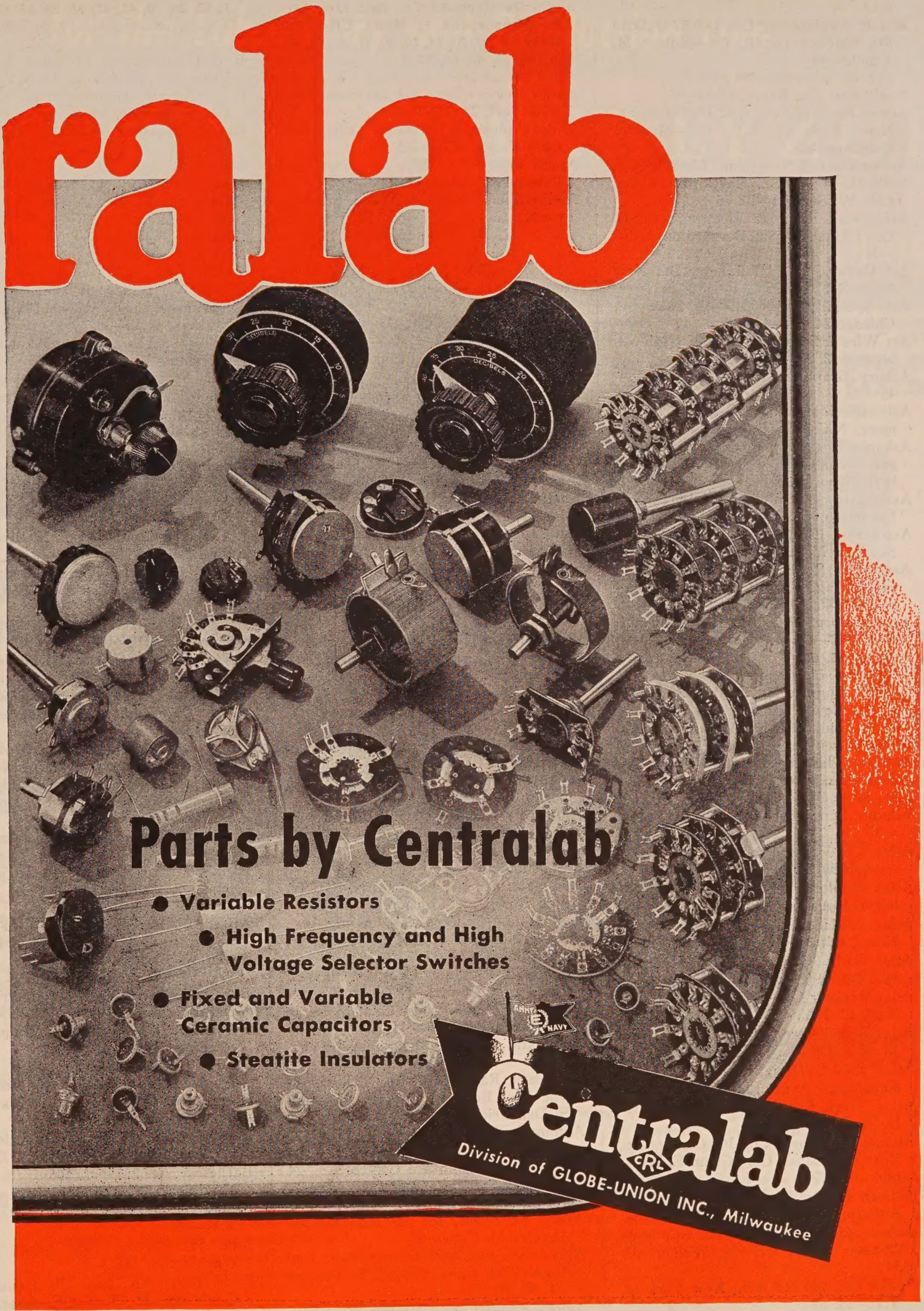
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- Variable Resistors
- High Frequency and High Voltage Selector Switches
- Fixed and Variable Ceramic Capacitors
- Steatite Insulators

Centralab

Division of GLOBE-UNION INC., Milwaukee

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New York 4, N.Y. CE—Carl Coleman—24

Arnold Engineering Co., 147 E. Ontario St., Chicago 11, Ill. CE—Robert M. Arnold—44
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Aro Equip. Co., Bryan, Ohio—43

Arrow Electronics Co., 82 Cortlandt St., New York 7, N.Y. CE—Maurice Goldberg—25

Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 5, Conn. CE—W. Seubert—19, 73

Arrowhead Radio & Electronic Prods. Co., 1216 D St., San Bernardino, Calif. —25

Art Radio Corp., 115 Liberty St., New York 6, N.Y.—25

Art Specialty Co., 3245 W. Lake St., Chicago 24, Ill.—42

Art Wire & Stamping Co., 227 High St., Newark 2, N.J.—80

Asbury Graphite Mills, Asbury, N.J.—45

Asheville Mica Co., 5 River Rd., Biltmore, N.C. CE—S. A. Montague—38

Askania Regulator Co., 1605 S. Michigan Ave., Chicago 16, Ill. CE—Herbert Ziebolz—27, 69, 80

Associated Broadcasters, Inc., San Francisco, Calif.—10

Associated Electronics Co., 132 Nassau St., New York 7, N.Y.—20

Associated Research, Inc., 231 S. Green St., Chicago 7, Ill. CE—J. A. Umbarger—24, 46, 70, 75

Astatic Corp., P.O. Bx. 120, Conneaut, Ohio CE—C. M. Chorpening—19, 23, 30, 47, 55, 65
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Atlantic Engineering Prods., 136 Liberty St., New York 6, N.Y.—25

Atlantic India Rubber Wks., Inc., 1453 Van Buren St., Chicago 7, Ill.—38

Atlantic Plastics & Metal Prods. Co., 2730 Grand Ave., Cleveland 4, Ohio—51, 57

Atlantic Screw Works, Hartford, Conn. —35

Atlas Condenser Prods. Co., 3118 3rd Ave., New York 56, N.Y.—13

Atlas Exploration Co., 1911 W. Alabama, Houston 6, Tex.—24

Atlas Prods. Corp., 30 Rockefeller Pl., New York 20, N.Y.—12, 16, 35, 58

Atlas Radio Corp., Ltd., 560 King St. W., Toronto, Ont., Can.—25

Atlas Resistor Co., 423 Broome St., New York 13, N.Y. CE—W. A. Merrill—70

Atlas Sound Corp., 1451 39th St., B'klyn 18, N.Y. CE—A. J. Saniel—2, 11, 42

Atlas Tool & Designing Co., Castor & Kensington Aves., Phila. 24, Pa.—43

Atlas Track Corp., Pleasant St., Fairhaven, Mass.—35

Atomic Instrument Co., 160 Charles St., Boston 14, Mass. CE—Glenn E. Whitham—20, 27

Auburn Button Works, 48 Canoga St., Auburn, N.Y. CE—J. Lawler—51

Auburn Mfg. Co., 100 Stack St., Middletown, Conn. CE—M. Weiner—35, 38

Audak Co., 500 5th Ave., New York 18, N.Y.—55, 65
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Theodore Audel & Co., 49 W. 23rd St., New York 10, N.Y.—9

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. CE—Paul Hake—2, 17, 20, 24, 28, 30, 31, 37, 39, 40, 52, 58, 59, 67, 69, 73, 77
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Audio Devices Inc., 444 Madison Ave., New York 22, N.Y.—65

Audio Industries, Michigan City, Ind. CE—Marvin Raatz—2, 55

Audio Prods. Co., 2101 S. Olive Ave., Burbank, Calif.—6

Audio Sound Labs., 8 Wood St., Toronto, Canada CE—C. R. Featherstone—2, 11, 16, 20, 27, 65

Audio-Tone Oscillator Co., 237 John St., Bridgeport 3, Conn. CE—W. Robert Dresser—2, 24, 27, 28, 31, 34, 42, 52, 66, 76

Augusta B'casting Co., Augusta, Ga.—10

Aurex Corp., 1115 N. Franklin St., Chicago 10, Ill.—24

Aurora Precision Devices, Geneva, Ill. —35

A. O. Austin, P.O. Bx. 109, Barberton, Ohio—5, 38

O. Austin Co., 42 Greene St., New York 13, N.Y.—35

Austin Electronic Mfg. Co., Warren, Pa.—2, 42

Auth Electrical Specialty Co., Inc., 422 E. 53rd St., New York 22, N.Y.—24

Authorized Radio & Telev. Service Co., Paterson, N.J.—25

Auto Engraver Co., 1776 B'way, New York 19, N.Y.—43

Autocall Co., 1142 Tucker Ave., Shelby, Ohio—68, 73

Auto-Lite Battery Corp., Bx. 931, Toledo, Ohio—7

Automatic Alarms, Inc., Youngstown, Ohio—27

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill. CE—K. W. Graybill—27, 34, 39, 40, 47, 56, 58, 59, 68, 70, 73

Automatic Electric Devices Co., 324 E. 3rd St., Cincinnati 2, Ohio—7

Automatic Electric Mfg. Co., 10 State St., Mankato, Minn.—24, 68, 73

Automatic Electric Sales Corp., 1033 W. Van Buren St., Chicago 7, Ill.—68

Automatic Mfg. Corp., 900 Passaic Ave., East Newark, N.J. CE—Joseph R. Mazzola—13, 18, 37, 77

Automatic Winding Co., 900 Passaic Ave., East Newark, N.J.—18, 77

Automatic Metal Prods. Co., 315 Berry St., B'klyn 11, N.Y.—19, 39

Automatic Nut Co., Inc., Lebanon, Pa. —35

Automatic Radio Mfg. Co., 122 Brookline Ave., Boston 15, Mass. CE—John S. Demetrick—63

Automatic Switch Co., 41 E. 11th St., New York 3, N.Y.—68

Automatic Temperature Control Co., 24 E. Logan St., Phila. 7, Pa. Res. Eng.—W. L. Hunt—27, 68, 73

Avery Adhesives, 451 E. 3rd St., Los Angeles 13, Calif.—43

Avia Prods. Co., 7266 Beverly Blvd., Los Angeles 36, Calif. CE—C. F. Booher —1, 30, 70

Aviola Radio Corp., 703 Ivy St., Glendale 4, Calif. CE—R. P. Adams—1, 79

Aviometer Corp., 370 W. 35th St., New York 1, N.Y. CE—Sterling G. Sears—1, 12, 20, 39, 42, 47, 51, 58, 63, 68, 78
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B & C Insulation Products, Inc., 261 Fifth Ave., New York 16, N.Y.—38

B-L Electric Manufacturing Co., St. Louis, Mo.—50, 59, 67, 81

Ba Ho Broadcasting Corp., Baltimore, Md.—10

Semon Bache & Co., 636 Greenwich St., New York 14, N.Y. CE—E. H. Deltosto—38, 43, 51A

Bacon Electric Timer Corp., 4513 Brooklyn Ave., Cleveland 9, Ohio—50, 68, 73

N. S. Baer Co., 9 Montgomery St., Hillside, N.J.—35, 38

George W. Bailey, Institute of Radio Engineers, 330 W. 42nd St., New York 18, N.Y.—20

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio—70, 75

Baird Associates, 33 University Rd., Cambridge 38, Mass. CE—Henry M. O'Bryan—24, 26

Hollis Baird, 221 Wilson Ave., Wollaston, Mass.—24, 26

Bakelite Corp., 30 E. 42nd St., New York 17, N.Y.—11, 38, 41, 51, 57, 65, 83

Baker & Co., Inc., 113 Astor St., Newark 5, N.J.—45

J. T. Baker Chemical Co., N. Broad St., Phillipsburg, N.J.—45

Baker Oil Tools, Inc., P.O. Bx. 127, Vernon Station, Los Angeles, Calif.—57

Balaban & Katz Corp., 190 N. State St., Chicago 1, Ill.—10

Baldor Electric Co., 4353 Duncan Ave., St. Louis 10, Mo.—50

Ballantine Laboratories, Inc., Boonton, N.J. CE—Edmund Osterland—1, 20, 46, 47, 75
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Baltimore Broadcasting Corp., North & Hartford Aves., Baltimore, Md.—10

A. Bamberger, 109 S. 5th St., Brooklyn 15, N.Y.—57

Bamberger Broadcasting Co., Cateract, N.J.—10

Bank's Manufacturing Co., 1105 Lawrence Ave., Chicago 40, Ill. CE—Maurice Bank—24, 69

Alfred W. Barber Labs., 34-04 Francis Lewis Blvd., Flushing, N.Y. CE—Alfred W. Barber—20, 24, 46, 75
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Barber-Colman Co., Molded Products Div., Rockford, Ill.—50, 68, 73

George D. Barbey Co., 434 Walnut St., Reading, Pa.—25

Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.—56

Bargelt Supply, 1131-35 S.W. Washington, Portland 5, Ore.—25

Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.—14, 18, 24, 75

Barnes & Noble, Inc., 105 Fifth Ave., New York 3, N.Y.—9

Barney's Radio Lab., Little Neck, L.I., N.Y.—25

John H. Barron, 1052 Earle Bldg., Washington, D.C.—20

L. N. Barry Co., Inc., 179 Sidney St., Cambridge 39, Mass. CE—Charles E. Crede—27

(Continued on page 18A)

Introducing A New Concept in High Speed Measurement for the Laboratory and Production Line . . .

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THE PANALYZOR provides an *instantaneous* visual presentation of static and dynamic characteristics of a band of radio signals in any part of the spectrum. Each signal produces its own characteristic deflection on the Panoramic screen, and each deflection reveals the frequency, amplitude, and stability of the corresponding signal. FM systems are "naturals" for PANORAMIC analysis.

Not only signals, but *any* variation of electrical or physical dimensions, convertible to a variation of frequency, can be more quickly and accurately measured by the PANORAMIC TECHNIQUE.

An outstanding feature of the PANALYZOR, in many applications, is that all necessary information is given without the necessity of the operator's balancing or adjusting the test equipment. PANORAMIC TECHNIQUE is economical in time and energy . . . but highly accurate in results.

Several models are available with different sweepwidths from 50kc to 6000kc. Speedwidths up to 20 megacycles available on special order.

Some Applications of the PANALYZOR

PRODUCTION

- Match inductances, capacitors, resistors, and I. F. Transformers.
- Compare components with standards.
- Test Crystals against standards — during grinding.
- Align FM discriminators.

BROADCAST STATION AND LABORATORY

- Study oscillator and transmitter behavior, frequency drift, "supering", carrier shift and modulation.
- Detect residual AM in FM transmitters.
- Detect residual FM in AM transmitters.
- Measure FM deviation.

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GAIN
SWEEPWIDTH
EQUALIZER
CENTER FREQ.

Panoramic Reception with the

PANADAPTOR

A "Must" for Modern Radio Shacks

Panoramic Reception enables *simultaneous visual* reception of many radio signals, continuously selectable from a broad band of frequencies down to a single frequency. With the PANADAPTOR connected to a receiver, having an I. F. between 450 and 470kc, you can see up to 200kc of the band at once.

Some Typical Applications

- Select QRM-free spots for sending and listening.
- Provide automatic visual and aural monitoring.
- Locate stations whose exact frequencies are not known.
- Enable observation of other fellow's frequencies in three-way or round robin QSOs — acts as an additional tunable receiver.
- Spot replies to your CQs.
- Provide instantaneous "S" meter for CW and PHONE.
- Simplify frequency setting and station monitoring.
- Facilitate netting operations.
- Assist in making adjustments of transmitters and antennas.
- Enable identification and interpretation of transmitter signal characteristics (your own and others).
  - **CW** . . . . key clicks, noise, frequency shift.
  - **PHONE** . . modulation percent, distortion, carrier shift and splatter, spurious supersonic and R.F. parasitics.
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Model PCA-2. Amateur net price, complete with 10 tubes and accessories, for 115 V., 50-60 cycle operation. **$99.75**

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PANORAMIC NEW YORK

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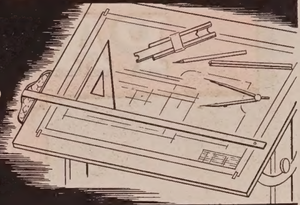
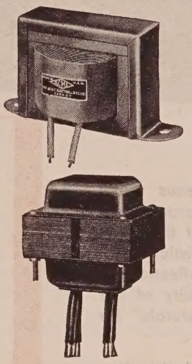
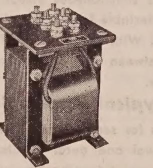
SPECIAL TRANSFORMERS
TO YOUR EXACT SPECIFICATIONS
MADE FROM
ACME STANDARD PARTS

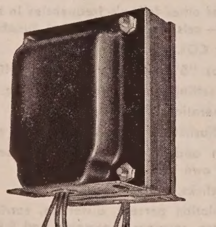


9 times out of 10, your special transformer design can be adapted to utilize Acme standard laminations and Acme standard mountings without sacrificing the performance you require. The final result being a transformer with the exact operating characteristics for your specific application at a comparably economical price.

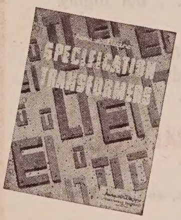




The transformer designs pictured on this page are but a few of the Acme mounting designs available for your application.



To assist electronic engineers in determining transformer design, this SPECIFICATION TRANSFORMER handbook provides dimensions, capacities and design illustrations. Free upon request. Write for Bulletin 168.



THE ACME ELECTRIC & MFG. CO.
CUBA, N. Y.

Acme ACME Electric
TRANSFORMERS

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Rex Bassett, Inc., 307-11 N.W. 1st Ave., Ft. Lauderdale, Fla. CE—Willard I. Bohlen—1, 4, 23, 24, 62, 63, 78
Bastian Bros. Co., 1600 Clinton Ave., Rochester 5, N.Y.—35, 43
John C. Batchelor, 46 Massachusetts Ave., Cambridge 39, Mass.—20
Ralph R. Batcher, 113-35 198th St., Hollis, L.I., N.Y.—20
Bates Laboratories, 30 West 58th St., New York 19, N.Y.—24
Bead Chain Mfg. Co., 60 Mt. Grove St., Bridgeport 5, Conn. CE—G. F. Bahr—39, 80
Bear Mfg. Co., Rock Island, Ill.—43
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Beaver Gear Works, Inc., 1025 Parmele St., Rockford, Ill.—43
Becker Bros. Carbon Co., 2450 S. 52nd Ave., Cicero, Ill.—43, 45
Leroy W. Beier & Co., 600 S. Michigan Ave., Chicago 5, Ill. CE—Leroy W. Beier—25
Belden Manufacturing Co., 4647 W. Van Buren Ave., Chicago 44, Ill.—CE—H. H. Wermine—12, 84
Bell & Howell Co., Electronics Div., 7100 McCormick Blvd., Lincolnwood, Ill.—CE—L. A. McNab—2, 42
Bell Radio & Television, 125 E. 46th St., New York 17, N.Y.—2, 25, 42
Bell Sound Systems, Inc., 1191 Essex Ave., Columbus 3, Ohio. CE—Clyde W. Baird—2, 42, 64, 65
The Bell Telephone Co. of Canada, Montreal, P.Q., Canada—10
Bell Telephone Labs., 463 West St., New York 14, N.Y.—10
Belle Alkali Co., Belle, W. Va.—41
Belmont Radio Corp., 5921 Dickens Ave., Chicago 39, Ill.—CE—W. L. Dunn—63
Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn 7, N.Y.—22, 35
Bend-a-Lite Plastics Co., 123 S. Honore St., Chicago 12, Ill.—51, 57
Herman L. Bender, 6635 N. 15th St., Philadelphia 26, Pa.—20
Bendix Aviation Corp., Bendix, N.J.—1, 50, 69
Bendix Aviation Corp., Friez Instrument Div., 1231 E. Lafayette Ave., Baltimore 2, Md. CE—Vernon D. Hauck—27, 34
Bendix Aviation, Ltd., 11600 Sherman Way, North Hollywood, Calif. CE—David Brown—1, 50, 69
Bendix Aviation Corp., Marine Div., 1 Hanson Place, Brooklyn 17, N.Y.—1, 75
Bendix Radio Corp., E. Joppa Rd., Baltimore 4, Md., CE—A. E. Abel—1, 2, 4, 62, 63, 78
Alex R. Benson Co., 4 E. Court St., Hudson, N.Y.—72
Bentley, Harris Mfg. Co., Hector & Lime Sts., Conshohocken, Pa. CE—Joseph M. Harris—38
The Benwood Linze Co., 1815 Locust St., St. Louis 3, Mo.—CE—Carl E. Peters—59, 67
Bergen Machine & Tool, Lyndhurst, N.J.—43

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RCA Offers Equipment Manufacturers a Nation-wide Tube Application Engineering Service

HEADQUARTERS GROUP

L. F. RANDOLPH
Manager, Field Sales

H. S. GWYNNE
Supervisor, Sales

L. MARTIN
Manager, App. Engineering

L. T. WEAGLE
Manager, Specialty Sales

L. S. THEES
Manager

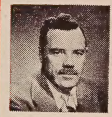
HEADQUARTERS GROUP

C. W. TAYLOR
Mgr., Tube Parts & Machinery

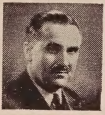
J. E. HENEY
Television Sales

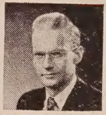
J. T. WILSON
Television App. Engineering

SALES ENGINEERING SPECIALISTS


M. E. MARKELL
Industrial Specialist

J. H. MOSHER
Sales & App. Engineering


G. R. RIVERS
Manager, Gov. Sales


J. H. HALGREN
App. Engineering, Government

CENTRAL

M. J. CARROLL
Field Sales

L. D. KIMMEL
Field Sales

NEW ENGLAND

E. A. FREED
Field Sales

T. B. PERKINS
Application Engineering

CENTRAL

H. F. HAFKER
Application Engineering

D. R. YODER
Application Engineering

NEW YORK STATE

W. KIRSCHNER
Field Sales

R. L. KELLEY
Application Engineering

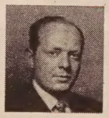
WESTERN

C. R. KLINGER
Field Sales

B. WALLEY
Application Engineering

MID-CENTRAL

E. J. BACHER
Field Sales


J. SADOWSKY
Application Engineering

N.Y., N.J., PENN. & SOUTH

J. S. STARRETT
Field Sales

N. MACKENZIE
Application Engineering

RCA announces expansion of its Tube Application Engineering Service which for years has been maintained for the sole purpose of assisting manufacturers of radio and electronic equipment in solving electron tube application problems.

A corps of 25 engineering and sales consultants and three tube application laboratories are now at the disposal of any equipment manufacturer concerned with design projects involving the use of electron tubes.

RCA tube application laboratories are maintained at Harrison, N. J.; Lancaster, Pa., and Chicago, Ill. Sales offices for equipment manufacturers are conveniently located at Harrison, Cleveland, Chicago and Los Angeles. Call the office nearest you. Or, send your problems to RCA, Commercial Engineering Department, Section D-18BF, Harrison, N. J., for prompt attention.

THE FOUNTAINHEAD OF MODERN TUBE DEVELOPMENT IS RCA

RCA

TUBE DEPARTMENT
RADIO CORPORATION of AMERICA
HARRISON, N. J.

A Ballantine
ELECTRONIC VOLTMETER
For every requirement

ALL MODELS HAVE THE SIMPLIFIED LOGARITHMIC SCALE

STANDARD Model 300

Ideal for the *Accurate* measurement of AC voltages in the Audio, Supersonic, Carrier Current and Television ranges.

Use of Logarithmic voltage scale assures uniform accuracy of reading over whole scale while permitting range switching in decade steps.

Each Voltmeter equipped with an output jack so that the instruments can be used as a high-gain stable amplifier.

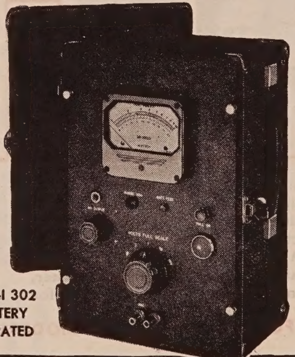
Model 304 R-F VOLTMETER

SPECIFICATIONS
MODEL 300
RANGE—.001 to 100 volts.
FREQUENCY—10 to 150,000 cycles.
ACCURACY—2% at any point on scale.
AC OPERATION—110-120 volts.

MODEL 304
RANGE—.001 to 100 volts.
FREQUENCY—30 c.p.s. to 5.5 megacycles
ACCURACY—0.5 DB.
AC OPERATION—110-120 volts.

MODEL 302
RANGE—.001 to 100 volts
FREQUENCY—5 to 150,000 cycles.
ACCURACY—2% at any point on scale.
DC OPERATION—self-contained batteries.

Send for Bulletin for further description



Model 302 BATTERY OPERATED

BALLANTINE LABORATORIES, INC.
BOONTON, NEW JERSEY, U. S. A.

(Continued from page 18A)

Berger Electronics, 109-01 72nd Rd., Forest Hills, L.I., N.Y.—27

Berks Broadcasting Co., Reading, Pa. —10

E. M. Berndt Corp., 7377 Beverly Blvd., Los Angeles 36, Calif. CE—G. A. Busch—27, 65

James S. Berry Co., Savannah, Tenn.—20

Berry's Radio & Electronic Service, 1381 Lexington Ave., N.Y. 28, N.Y.—25

Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N.J. CE—Robert L. Gaston—42, 68, 77

Bethlehem Steel Co., Steelton, Pa.—22, 45

Betts & Betts Corp., 551 W. 52nd St., New York 19, N. Y. CE—J. S. Yarrow—68, 73

James G. Biddle Co., 1211 Arch St., Philadelphia 7, Pa.—24, 70, 75

Billings & Spencer Co., 1 Laurel St., Hartford, Conn.—43

Richard H. Bird & Co., 23 Moody St., Waltham 54, Mass.—43, 46

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio CE—J. R. Bird—5, 6, 12, 19, 24, 30, 46, 70, 73, 75
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Birmingham Broadcasting Co., Birmingham, Ala.—10

Birmingham Sound Reproducers Ltd., Claremont Works, Claremont St., Old Hill, Staffs, England CE—Dr. D. McLean McDonald—2, 17, 31, 52, 63, 65, 75, 77, 81, 82

Birnbach Radio Co., Inc., 145 Hudson St., New York 13, N.Y. CE—Morris Birnbach—4, 5, 12, 15, 35, 38, 39, 58, 71, 84

The Birtcher Corp., 5087 Huntington Dr. Los Angeles 32, Calif. CE—A. G. Babeaux—24, 35, 68

Bishop & Co. Platinum Works, 12, Channing Ave., Malvern, Pa.—45

Bittan-Nevins Co., 53 Park Place, New York 7, N.Y.—25

A. Bitter Construction Co., 721 E. 133 St., Bronx 54, N.Y.—11

Bitterman Electric Co., 50 Henry St., Brooklyn 2, N.Y.—18

Biwax Corp., 3445 Howard St., Skokie, Ill. CE—H. W. Herbst—83

Black Bear Co., Inc., 44-45 23rd St., Long Island City 1, N.Y. CE—Frowell Schleicher—43

Black & Decker Electric Co., Kent, Ohio—43

Black Industries, Mec-Rad Div., 1400 E. 222nd St., Cleveland 17, Ohio CE—J. A. Altmayer—2, 4, 5, 63

The Whitney Blake Co., 1565 Dixwell Ave., New Haven 14, Conn. CE—B. R. Hubbard—12, 84

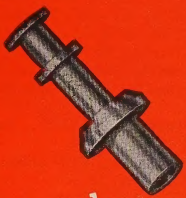
Blake & Johnson Co., 1495 Thomaston Ave., Waterville, Conn.—35

The Blakiston Co., 1012 Walnut St., Philadelphia 5, Pa.—9

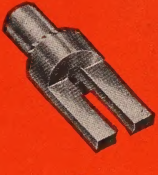
Blaw-Knox Co., P.O. Box 1198, Blaw-Knox, Pa.—4

Bliley Electric Co., 227 Union Station Bldg., Erie, Pa.—CE—J. M. Wolfskill—23
See our advertisement pages 97-100-A

(Continued on page 22A)



1.



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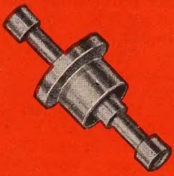

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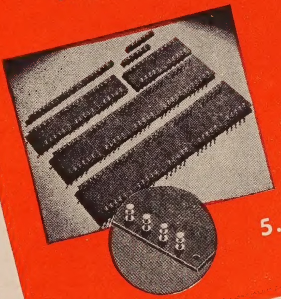
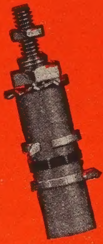


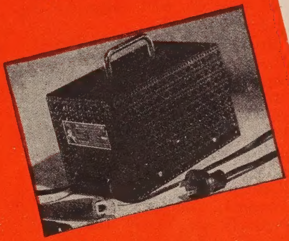
5.



6.

7.

CTC
CRYSTAL UNIT
CAMBRIDGE THERMIONIC
CORP.
FREQ. KC.
SERIAL
1850
8685
MODEL
HPB
TEMP.
25°C



8.

Specify C.T.C. COMPONENTS THAT *Click!*

1. C.T.C. TURRET TERMINAL LUGS. A short cut to speedy assembly. Heavily silvered brass lugs that firmly swage to terminal boards. Lugs heat quickly assuring neat positive wiring. Stocked to fit 1/32", 1/16", 3/32", 1/8", 3/16" and 1/4" boards. Available with single soldering space and in Midget sizes.

2. C.T.C. SPLIT TERMINAL LUGS. A 0.50" hole through the lugs makes them ideal for manufacturers of transformers or other potted units requiring soldering after potting. Excellent for terminal boards, too, because wiring can be done from top or bottom without drilling. Brass, heavily silver plated to fit 3/32" boards.

3. C.T.C. DOUBLE END TERMINAL LUGS. Two terminal posts in a single swaging operation. Perfect electrical contact because both posts are part of same lug. Neat, positive wiring from top or bottom. Heavily silver plated brass to fit 3/32" boards. Also available in Midget size.

4. C.T.C. HAND PRESSURE SWAGER. Quickly and securely swages Lugs to Terminal Boards. Fits all thicknesses of boards and puts Lugs in right side up as far as 1 7/8" from edge. Unit pictured swages all C.T.C. Standard Lugs. Additional anvils and punches available to fit Double End and Split Lugs.

5. C.T.C. TERMINAL BOARDS. Made to your specifications of linen bakelite with any type of C.T.C. Lug securely swaged in position. Also *All-Set Terminal Boards* stocked in 4 board widths 1/2"; 2" (lug row spacing 1 1/2") 2 1/2" (lug row spacing 2") and 3" (lug row spacing 2 1/2"); in 3 board thicknesses—3/32", 1/8", and 3/16". Fit all standard resistors and condensers.

6. C.T.C. I-F Slug Tuned INDUCTORS. Easy-to-mount LS-3 coils are available in four windings — 1, 10, 30 and 60 megacyles. Total possible frequency span 1/2 mc. to better than 150 mc. Also special coils built to your specifications.

7. MATHEMATICALLY DIMENSIONED CRYSTALS. This new C.T.C. development assures consistent performance, guarantees high activity and long life in every C.T.C. CRYSTAL. But one of 21 steps and checks that protect quality of C.T.C. Crystals.

8. C.T.C. RECTIFIER. Copper Oxide battery charger has an output of 7.5 volts and delivers 6 amps. No maintenance cost, no moving parts to wear out. Easy to handle and move.

WRITE FOR C.T.C. CATALOG No. 100

It contains complete information on these and other C.T.C. radio and electronic components you should know about. It's yours without obligation, of course.

CTC

CAMBRIDGE THERMIONIC CORPORATION

456 Concord Avenue • Cambridge 38, Mass.

(Continued from page 20A)

Wesley Block & Co., 15 E. 26th St., New York 10, N.Y.—25
Bludworth Marine Div., National Simplex Bludworth, Inc., 100 Gold St., New York 7, N.Y.—24, 34, 62
Julius Blum & Co., Inc., 532 W. 22 St., New York 11, N.Y.—38, 57
Bodine Electric Co., 2254 E. Ohio St., Chicago 12, Ill.—49, 50
Charles J. Bodnar Co., 58 Marbledale Road, Tuckahoe 7, N.Y. CE—William Spencer—63, 78
H. O. Boehme, Inc., 915 Broadway, New York 10, N.Y.—CE—F. Kunc—65
The W. W. Boes Co., 3001 Salem Ave., Dayton 3, Ohio—46, 77
Boetsch Bros., 221 E. 144th St., Bronx 51, N.Y.—64
David Bogen Co., 663 Broadway, New York 12, N.Y.—CE—Alfred Zuckerman—2, 42
Bogue Electric Co., Paterson, N.J.—50
Bohn Aluminum & Brass Corp., Lafayette Bldg., Detroit 26, Mich.—45
Bond Electric Corp., 148 Munson St., New Haven 11, Conn.—7
Bond Products Co., 13139 Hamilton Ave., Detroit 3, Mich.—27
Lew Bonn Co., 1211 La Salle, Minneapolis 4, Minn.—25
Bonney Forge & Tool Works, Allentown, Pa.—43
Boom Electric & Amplifier Co., 1227 W. Washington Blvd., Chicago 7, Ill., CE—E. O. Platt—2, 25, 42
Boonton Molding Co., 326 Myrtle Ave., Boonton, N.J. CE—Gordon B. Sayre—38, 51, 57
Boonton Radio Corp., Fanny Road, Boonton, N.J. CE—Leonard Blakely—1, 24, 31, 75, 79
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John L. Booth Broadcasting Inc., Detroit, Mich.—10
Boots Aircraft Nut Corp., New Canaan, Conn.—35
George W. Borg Corp., Delaware, Wisconsin—24
Bostitch, E. Greenwich, R.I.—43
Boston Insulated Wire & Cable Co., 65 Bay St., Boston, Mass.—5, 12, 19, 84
Boulin Instrument Co., 65 Madison Ave., New York 16, N.Y.—75
Bound Brook Oil-Less Bearing Co., Bound Brook, N.J.—22
Bowers Battery & Spark Plug Co., Reading, Pa.—7
Bowser, Inc., Mobile Refrigeration Div., 38-32 54th St., Woodside, L.I., N.Y.—43
L. S. Brach Mfg. Corp., 200 Central Ave., Newark 4, N.J.—4, 5, 58
Bradley Labs., Inc., 82 Meadow St., New Haven 10, Conn.—CE—Charles D. Bradley—67
C. S. Brainin Co., 233 Spring St., New York 13, N.Y.—CE—C. S. Brainin—35, 45
William Brand & Co., 268 Fourth Ave., New York 10, N.Y.—38, 84
Brandywine Fibre Products Co., Box 767, Wilmington 99, Del.—38, 51
Branston Electric Mfg. Co., Buffalo, N.Y.—12, 36
Gordon Braun Radio Co., Oakland, Calif.—25
Brazilian Trading Co., Inc., 377 Fourth Ave., New York 16, N.Y.—25
Breeze Corp., Inc., Newark 7, N.J.—19, 35, 84
Bremer Broadcasting Corp., 15 Hill St., Newark 2, N.J.—10
Brentwood Radios, Inc., 43 Downing St., New York 14, N.Y. CE—Milton Nechemias—63
Breon Labs., Williamsport, Pa.—23
Bridge Metal Products Co., 201 Front St., Brooklyn 1, N.Y.—11, 16, 61
Bridgeport Brass Co., Grand St., Bridgeport 8, Conn.—45
Bridgeport Hardware Mfg. Corp., Iranistan Ave., Bridgeport, Conn.—43
Bridgeport Mfg. Co., Bridgeport, Ill. —17, 18, 77
Bridgeport Molded Products, Inc., 303 Myrtle Ave., Bridgeport 4, Conn.—51
Briggs & Stratton Corp., 2711 N. 13th St., Milwaukee 6, Wis.—49
Bright Star Battery Co., 200 Crooks Ave., Clifton, N.J.—7
Arnold Brilhart Co., Great Neck, N.Y. —51, 57
Brill Co., 10th & Jackson Sts., Oakland, Calif.—25
The Bristol Co., Waterbury 91, Conn. —34, 75
British Broadcasting Corp., 630 Fifth Ave., New York 20, N.Y.—10
British Columbia Tel. Co., Ltd., Vancouver, British Columbia—10
British Electrical Research Assn., London, England—20
British Industries Sales Corp., 401 Broadway, New York 13, N.Y.—72
British Sound Equipment Co., Los Angeles, Calif.—2, 42
Broadcast Measurement Bureau, 270 Park Ave., Apt. 11G, New York 17, N.Y.—9
Broadcast Relay Services, Ltd., London, England—10
Brooke Engineering Co., 4517 Wayne Ave., Philadelphia 44, Pa.—27
Brown Co., 500 Fifth Ave., New York 18, N.Y.—38, 57
Brown, Boveri, & Co., Baden, Switzerland—1, 10, 30, 36, 59, 69, 78-80
The Brown-Brockmeyer Co., P.O. Box 976, Dayton 1, Ohio—CE—James L. Trant—49, 50
The Brown Engineering Co., 4635 S.E. Hawthorne Blvd., Portland 15, Ore. CE—Frank Brown—13, 31, 35, 52, 70, 73, 75
Brown Instrument Co., 4536 Wayne Ave., Philadelphia 44, Pa.—27, 68, 73, 75
W. J. Brown International Co., 5805 Hough Ave., Cleveland 3, Ohio—25
Browning Labs., 750 Main St., Winchester, Mass. CE—F. A. Spindell—20, 24, 27, 31, 52, 63, 75
Charles Bruning Co., Inc., 4700 Montrose Ave., Chicago 41, Ill.—26
Bruno-New York, Inc., 460 W. 34th St., New York 1, N.Y.—CE—Irving Strauss—25
Brunswick Radio Div., Mersman Bros., Inc., 224 Madison Ave., New York 16, N.Y.—11
The Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio CE—A. L. Williams—23, 34, 42, 47, 53, 55, 65, 75
Bryan Davis Publishing Co., Inc., 52 Vanderbilt Ave., New York 17, N.Y. —9
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Bryant Electric Co., Plastics Div., 1105 Railroad Ave., Bridgeport 5, Conn.—19, 58, 73
Bryant Mfg. Co., 401 N. Pauline St., Chicago 22, Ill.—7, 56
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio CE—M. L. Haas—11, 14, 35, 38, 54, 56, 61, 73
Buda Co., Harvey, Ill.—49
Budd Induction Heating Inc., 11811 Charleveaux St., Detroit 14, Mich.—36
Buffalo Broadcasting Corp., Buffalo, N.Y.—10
H. H. Buggie & Co., 2141 Madison Ave., Toledo, Ohio—19, 58
A. F. Bulgin & Colt, Essex, England—2, 14, 35
Bundy Tubing Co., 10951 Hern Ave., Detroit 7, Mich.—45
J. H. Bunnell Co., 81 Prospect St., Brooklyn 1, N.Y.—35, 40, 68
Bunting Brass & Bronze Co., 715 Spencer St., Toledo, Ohio—45
The Burdick Corp., Milton, Wis., CE—R. H. Maxson—24
Burgess Battery Co., Acoustic Div., 180 N. Wabash St., Chicago 1, Ill.—2
Burgess Battery Co., Battery Div., Freeport, Ill.—7
Burke Electric Co., 12th & Cranberry Sts., Erie, Pa.—35, 49, 50
Burke Electric & X-Ray Co., Ltd., 61-63 Yorkville Ave., Toronto 5, Ontario, Canada CE—George F. Kelk—24, 27, 36, 52, 55, 65
Burke & James, Inc., 223 W. Madison St., Chicago 6, Ill.—27
Burling Instrument Co., 253 Springfield Ave., Newark 2, N.J.—27
Burlingame Associates, Ltd., 11 Park Place, New York 7, N.Y.—25
Burlington Instrument Co., 1800 Fourth St., Burlington, Iowa. CE—F. E. Bulmahn—46, 82
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Burndy Engineering Co., Inc., 107A Bruckner Blvd., New York 54, N.Y. CE—Julian Rogoff—19, 35, 38, 43
William W. L. Burnett Radio Lab., 4814 Idaho St., San Diego 4, Calif. CE—W. W. L. Burnett—17, 20, 23, 24, 31, 32, 48, 52, 63, 75, 78
Burstein-Applebee Co., 1012-14 McGee St., Kansas City 6, Mo. CE—H. Fromhold—25
Burton-Rogers Co., 857 Boylston St., Boston 16, Mass. CE—V. S. Church —46
Bussey Research Labs. 232 E. Erie St., Chicago 11, Ill.—20
Bussman Mfg. Co., University at Jefferson, St. Louis 7, Mo. CE—H. T. Bussman—33
Butte Electric Co., 124 Russ Ave., San Francisco 3, Calif. CE—R. W. Randolph—27
Buttrey Broadcasting Inc., Great Falls, Montana—10

C&C Tower & Erection Co., Inc., 15 N. Wood Ave., Linden, N.J.—4

(Continued on page 24A)

Foremost Manufacturers of Transformers
to the ELECTRONIC INDUSTRY

United Transformer Corp.

150 VARICK STREET • NEW YORK 13, N. Y.

EXPORT DIVISION: 13 EAST 40th STREET, NEW YORK 16, N. Y., CABLES: "ARLAB"

(Continued from page 22A)

CHRC, 11 Buade St., Quebec, Canada—10

CKEY Radio Station, 999 University Ave., Toronto, Canada—10

C. W. Mfg. Co. 3800 Brooklyn Ave., Los Angeles 33, Calif.—23

Caldwell-Clements Inc. 480 Lexington Ave., New York 17, N.Y.—9

Calebaugh Self-Lubricating Carbon Co. 2245 E. Ontario St., Philadelphia 34, Pa.—45

Calibron Prods. Inc., 51 Lakeside Ave. West Orange, N.J.—24

California Telephone & Electric Co., 6075 W. Pico Blvd., Los Angeles 13, Calif.—27, 42, 47

Callite Tungsten Corp. 544 39th St., Union City, N.J. CE—J. A. Kurtz—45, 84

Caltron Co., 11916 W. Pico Blvd. Los Angeles 34, Calif. CE—R. G. Leitner—42, 47, 55, 65

Calvert Motors Associates Ltd., 26 E. 25th St., Baltimore 18, Md.—49

Cambridge Instrument Co., Grand Central Terminal Bldg., New York 17, N.Y.—24, 75

Cambridge Thermionic Corp., 456 Concord Ave., Cambridge 38, Mass. CE—Dr. Arthur L. Quirk—23, 35, 67, 77
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Camloc Fastener Corp., 420 Lexington Ave., New York 17, N.Y. CE—S. W. Hennessey, Jr.—35

Campbell X-Ray Corp., 110 Cummington St., Boston 15, Mass. CE—F. R. Campbell—24, 77

Canadian B'casting Co., 1236 Crescent St., Montreal, Canada—10

Canadian Gen'l Elec. Co. Ltd., 212 King St. W., Toronto 1, Ont. Can.—1-6, 8, 10, 12, 13, 15, 20, 21, 23, 25, 27, 28, 30, 31, 33-38, 41, 42, 44, 46, 48-57, 59-61, 63, 67-69, 73, 75, 77-80, 82, 84

Canadian Motion Sound Co., 1 Industrial St., Leaside, Ont. Canada CE—A. Glazer-63, 78

Canadian Research Institute 46 St. George St., Toronto 5, Ont. Canada. CE—R. Spencer Soanes—2, 20, 24, 27, 36, 46, 59, 75, 82

Candler System Co., Dept. 2-E, Box 298, Denver 1, Colo.—74

Candy & Co. 2515 W. 35th St., Chicago 32, Ill.—83

Canisteo Electronic Instrument Labs. 30 E. Main St., Canisteo, N.Y. CE—Clyde E. Ingles—1, 20, 24, 31, 46, 62, 63, 75

C. F. Cannon Co., Main St., Springwater, N.Y. CE—Waldo Snyder—42

Cannon Electric Development Co. 3209 Humboldt St., Los Angeles 31, Calif. CE—E. J. Neifing—19, 39, 58

Cantol Wax Co., 211 N. Washington St., Bloomington, Ind.—83

Capacitron Co., 849 N. Kedzie Ave., Chicago 51, Ill. CE—A. Sklar—13

Oscar Capian & Sons Diamond Tool Replacement Div., 207 W. Saratoga St., Baltimore 1, Md.—23

Capitol B'casting Co., Raleigh, N.C.—10

Capitol Radio Engineering Inst., 3224 16th St., N.W., Washington 10, D.C. CE—E. H. Rietzke—74

Frank L. Capps Co., 244 W. 49th St., New York 19, N. Y.—65

Carb Mfg. Co. 25 Carroll St., B'klyn 31, N.Y.—11

Carbide & Carbon Chemicals Corp., Plastics Div., 30 E. 42nd St., New York 17, N.Y.—51, 57

Carbon Engineering Corp., Singer, Wis.—45

Carbon & Graphite Corp., 249 W. B'way New York 13, N.Y.—45

Carborundum Co., Globar Div., Niagara Falls, N.Y. CE—B. A. Bovee—70

Cardinell Corp. Montclair, N.J.—26

Allen D. Cardwell Mfg. Corp., 81 Prospect St., B'klyn 1, N.Y. CE—M. Aptstein—11, 13, 14, 24, 31, 52
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Cardy-Lundmark Co., 1801 W. Byron St., Chicago 13, Ill.—5, 43

Philip Carey Mfg. Co., Lockland, Cincinnati, Ohio—38

Carlisle Crystal Corp., Carlisle, Pa.—23

F. W. Carlson, 6257 Warwick, Chicago 34, Ill.—2

Carlton Lamp Corp., 730 S. 13th St., Newark 7, N.J.—35, 56

Carnegie-Ill. Steel Corp., 930 Carnegie Bldg., Pittsburgh 30, Pa. CE—J. P. Barton—22, 45

Carolina Narrow Fabric Co., 1036 N. Chestnut St., Winston-Salem, N.C.—38

Carpenter Mfg. Co., Cambridge, Mass.—7

Carpenter Prods. Inc., 85 Washburn St., Bridgeport, Conn.—43

Carrier Corp. 300 S. Geddes St., Syracuse 1, N.Y.—43

Carrier Microphone Co., 145 E. Hillcrest, Inglewood, Calif.—47

Carrillitone Mfg. Co., 30 N. Penn St., York, Pa.—44, 75

Carron Mfg. Co., 415 S. Aberdeen St., Chicago 7, Ill.—18, 42, 77

Carson Machine & Supply Co., Box 4547 Oklahoma City, Okla. CE—E. R. Pragg—21, 49

Carson Micrometer Corp., Box 57, Little Falls, N.J.—46

Carter's Ink Co., Cambridge, Mass.—26

Carter Motor Co., 2638 N. Maplewood Ave., Chicago 47, Ill. CE—R. W. Carter—21, 49, 59
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Carter Prods. Corp., 6924 Carnegie Ave., Cleveland 3, Ohio—51, 57

Cary Spring Wks. Inc., 240 W. 29th St., New York 1, N.Y.—35

Castlewood Mfg. Co. Inc., 12th & Burnett Sts., Louisville 10, Ky. CE—Don Fuller—11

Caswell-Runyan Co., Huntington, Ind.—11

Catalin Corp. 1 Park Ave., New York 16, N.Y.—51, 57

Caterpillar Tractor Co., Peoria, Ill. CE—G. E. Burks—59

Cathodeon Ltd., Hertford St., Cambridge, England CE—G. Liebman—60, 67, 80

Celanese Celluloid Corp., 180 Madison Ave., New York 16, N.Y.—51, 57

Celluplastic Corp., 50 Ave. L., Newark 5, N.J.—57

Cellusuede Prods. Inc., 500 N. Madison St., Rockford, Ill.—35

Celotex Corp., 120 S. LaSalle St., Chicago 3, Ill.—43

Central B'casting Co., Eau Claire, Wis., Des Moines, Iowa—10

Central B'casting Station, Chungking, China—10

Central Cable Corp., 4 S. 15th St., Philadelphia 2, Pa.—12

Central Paper Co. Inc., 2442 Lakeshore Drive, Muskegon, Mich.—38

Central Process Corp., 1401 S. Circle Ave., Forest Park, Ill.—51-57

Central Res. Labs. Inc., Red Wing, Minn.—2, 20, 24, 53, 75

Central Scientific Co., 1700 Irving Pk. Blvd., Chicago 13, Ill. CE—C. S. Hornberger—24, 27, 75

Central Screw Co., 3501 Shields Ave., Chicago 9, Ill.—35

Central States B'casting Co., Omaha, Neb.—10

Centralab Div. of Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 11, Wis. CE—J. Fletcher Harper—13, 15, 70, 73
See our advertisement pages 14, 15-A

Centro Res. Labs. Inc., Brandywine, Sleepy Hollow Rd., Briarcliff Manor, N.Y.—41

Century Electric Co., 1808 Pine St., St. Louis 3, Mo.—49, 50

Ceramic Specialties Co., East Liverpool, Ohio—38

W. M. Chace Co., 1600 Beard Ave., Detroit 9, Mich.—45

Chamberlain Labs., 647 Ardson Rd., East Lansing, Mich.—43

Chandler Prods. Corp., 1491 Chardon Rd., Cleveland 17, Ohio—35

P. E. Chapman Electrical Wks., 1820 Chouteau Ave., St. Louis 3, Mo.—43

S. Charp, 200 S. 33rd St., Philadelphia 4, Pa.—20

Chase Brass & Cooper Co., 236 Grand St., Waterbury 35, Conn.—45

Chase-Shawmut Co., Newburyport, Mass.—33

Chaslyn Co., 1906 Irving Park Rd., Chicago 13, Ill.—75

Chatham Electronics, 475 Washington St., Newark 2, N.J.—80
See our advertisement page 25-A

John Chatillon & Sons, 85093 Cliff St., New York 7, N.Y.—35

Chelsea Fan & Blower Co., 1206 Grove St., Irvington, N.J.—8

Chemaco Corp., Berkeley Heights, N.J. CE—W. J. A. Connor—57

Chemical Publ. Co., Inc., 26 Court St., Brooklyn 2, N.Y.—9

Chereton Prods. Co., 4801 Woodward Ave., Detroit 1, Mich.—21

Cherry Rivet Co., 231 Winston St., Los Angeles 13, Calif. CE—M. C. Ketchum—35, 43

Chesapeake & Potomac Telephone Co., Div. of Amer. Tel. & Tel., Norfolk, Va.—10

Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.—70

Chicago Condenser Corp., 3255 W. Armitage Ave., Chicago 47, Ill. CE—Anthony N. Genovese—13

Chicago Flexible Shaft Co., 5600 Roosevelt Rd., Chicago 50, Ill.—35

Chicago Metal Hose Corp., 1315 S. 3rd Ave., Maywood, Ill.—79

Chicago Molded Prods. Corp., 1020 N. Kolmar Ave., Chicago 51, Ill. CE—Fred Swanson—51, 57

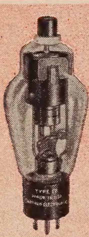
(Continued on page 26A)

9 FACTORS in efficient, dependable, long-life

RECTIFIER PERFORMANCE

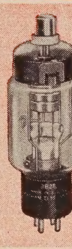
CHATHAM engineers are specialists in rectifier design and production. Their concentration of effort in this field—the large scale production of rectifiers for industry and communication—has naturally culminated in exclusive design advancements and lowered costs.

The CHATHAM rectifiers illustrated are but a few of the many types available. Although production is centered around standard types for complete interchangeability and to comply with industry wide standardization, each CHATHAM type incorporates proven advantages — mechanical and electrical —that improve performance and minimize replacements. Inquiries are invited; no obligation is incurred.



17 Grid Controlled Mercury Vapor Rectifier

Peak inverse voltage 5,000 volts
Peak plate current 2.0 amps
Average plate current .5 amps
Filament voltage 2.5 volts
Filament current 5.0 amps
Condensed mercury temperature 40° C to 80° C



3B28 Half Wave Xenon Rectifier

Peak inverse voltage 10,000 volts
Peak plate current 1.0 amps
Average plate current .250 amps
Filament voltage 2.5 volts
Filament current 5.0 amps
Ambient temperature range −75° C to +90° C

866A Half Wave Mercury Vapor Rectifier

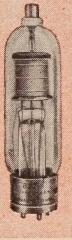
Peak inverse voltage 10,000 volts
Peak plate current 1.0 amps
Average plate current .25 amps
Filament voltage 2.5 volts
Filament current 5.0 amps
Condensed mercury temperature 25° C to 60° C

394A Grid Controlled Argon-Mercury Vapor Rectifier

Peak inverse voltage 1,250 volts
Peak plate current 2.5 amps
Average plate current .64 amps
Filament voltage 2.5 volts
Filament current 3.2 amps
Condensed mercury temperature −40° C to +80° C

4B32 Half Wave Xenon Rectifier

Peak inverse voltage 10,000 volts
Peak plate current 5.0 amps
Average plate current 1.25 amps
Filament voltage 5.0 volts
Filament current 7.5 amps
Ambient temperature range −75° C to +90° C



872A Half Wave Mercury Vapor Rectifier

Peak inverse voltage 10,000 volts
Peak plate current 5.0 amps
Average plate current 1.25 amps
Filament voltage 5.0 volts
Filament current 7.5 amps
Condensed mercury temperature 20° C to 60° C

884 Grid Controlled Argon Rectifier and Oscillator

Peak inverse and peak forward voltage 300 volts
Peak plate current 300 Ma
Average plate current 75 Ma
Average plate current (oscillator) 2 Ma
Filament voltage 6.3 volts

4B22 Full Wave Argon Rectifier

Peak inverse voltage 340 volts
Peak plate current 15 amperes
Load current 5.0 amps
Filament voltage 2.5 volts
Filament current 12.0 amps

2050 Grid Controlled Xenon Rectifier

Peak inverse voltage 1,300 volts
Peak plate current 500 Ma
Average plate current 100 Ma
Filament voltage 6.3 volts
Filament current .6 amps

CHATHAM ELECTRONICS
475 WASHINGTON STREET, NEWARK 2, NEW JERSEY

(Continued from page 24A)

Chicago Rivet & Machine Co., 9600 W. Jackson Blvd., Bellwood, Ill.—35

Chicago Sound Systems Co., 2124 S. Michigan Ave., Chicago 16, Ill. CE—John Barrett—2, 55, 64, 65

Chicago Telephone Supply Co., 1142 W. Beardsley Ave., Elkhart, Ind. CE—B. S. Turner—58, 68, 70

Chicago Tool & Engineering Co., 8383 S. Chicago Ave. S., Chicago 17, Ill. —43

Chicago Transformer Div. of Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill. CE—Don Schwennesen —17, 30, 77

See our advertisement page 180-A

Chrysler Corp. Amplex Div., Box 1919 Highland Park, Mich.—22

John F. Church & Co., 4753 N. B'way, Chicago 40, Ill.—25

Churchill Cabinet Co., 2119 W. Churchill St., Chicago 47, Ill.—11, 16, 54

Ciba Corp., 627 Greenwich St., New York 14, N.Y.—51, 57

Cinaudagraph Corp., 2 Selleck St., Stamford, Conn. CE—Earl H. Underhill—44

Cinaudagraph Speakers Inc., 3911 S. Michigan Ave., Chicago 15, Ill.—42

Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill. CE—C. L. Knutson—35, 56, 71

Cincinnati Elec. Prods. Co., Carthage at Hannaford, Norwood, Cincinnati 12, Ohio CE—S. G. Lang—38

Cincinnati Molding Co., 2037 Florence Ave., Cincinnati 6, Ohio—51, 57

Cincinnati & Suburban Bell Telephone Co., Cincinnati, Ohio—10

Cincinnati Time Recorder Co., 1733 Central Ave., Cincinnati 6, Ohio—2

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif. CE—Art Davis—2, 6, 10, 19, 20, 24, 30, 38, 39, 40, 46, 54, 55, 58, 59.

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Cinesimplex Corp., Syracuse, N.Y.—2

C. P. Clare & Co., 4719 W. Sunnyside Ave., Chicago 30, Ill. CE—D. R. Dooley—39, 40, 68, 73

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Robert H. Clark Co., 9330 Santa Monica Blvd., Beverly Hills, Calif. CE—L. A. Smith—43

Wallace Clark & Co., 521 5th Ave., New York 17, N.Y.—20

Clark Bros. Bolt Co., Milldale, Conn. —35

Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio—27, 68

Clark Labs., Box 165, Palm Springs, Calif. CE—D. B. Clark—24

Clark Radio Equip. Corp., 4313 N. Lincoln Ave., Chicago 18, Ill. CE—M. L. Koerner—2, 42, 65

Clarostat Mfg. Co. Inc., 285-7 N. 6th St., Brooklyn 11, N.Y. CE—George J. Mucher—6, 17, 27, 62, 70, 73, 75, 82

Claude Neon Lights Inc., 545 5th Ave., New York 18, N.Y.—27, 63, 65, 77, 78

Clements Mfg. Co., 6650 S. Narragansett Ave., Chicago 38, Ill.—21, 49

Clendenin Bros., 108 South St., Baltimore 2, Md.—35

Cleveland Container Co., 10636 Berea Rd., Cleveland 2, Ohio—38

Cleveland Plastics Inc., 1611 E. 21st St., Cleveland 14, Ohio CE—M. L. Boyd—51

Cleveland Time Clock and Service Co., Superior Ave. at E. 27th St., Cleveland 14, Ohio—73

Cleveland Tungsten Inc., 10200 Meech Ave., Cleveland 5, Ohio CE—S. Schein—45

Cleveland Wire Cloth & Mfg. Co., 3573 E. 78th St., Cleveland 5, Ohio—84

Cleveland Wire Spring Co., Cuyahoga Hghts., Cleveland 13, Ohio—35

Climax Engineering Co., Clinton, Iowa —49

Clippard Instrument Lab., Cincinnati, Ohio—24, 46, 75

Clough-Brengle Co., 6014 N. B'way, Chicago 40, Ill. CE—Kendall Clough —52, 53, 75

Coates Clipper & Mfg. Co. 237 Chandler St., Worcester, Mass.—35

Cobb and Drew, Kingston St., Plymouth, Mass.—35

Cochrane Chemical Co., 432 Danforth Ave., Jersey City, N.J.—57, 83

Sigmund Cohn & Co., 44 Gold St., New York 7, N.Y.—45, 84

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Coil Engineering & Mfg. Co. Inc., Bx. 24, Roanoke, Ind. CE—John M. Ross —18

Cole-Hersee Co., 54 Old Colony Ave., Boston 27, Mass.—19, 27, 73

Cole Radio Works, Caldwell, N.J. CE—A. B. Cole—43, 77

Cole Steel Equip. Co., 349 B'way, New York 13, N.Y.—11, 16, 61

Coleman Electric Co., 318 Madison St., Maywood, Ill.—27

Colen-Gruhn Co. Inc., 387 4th Ave., New York 16, N.Y.—25

Collins Co., 644 Landfair Ave., Westwood Village, Los Angeles 24, Calif. —47

Collins Radio, 409 Lonsdale St., Melbourne, Victoria, Aust. CE—Reuben J. Collins—24, 25, 32, 63

Collins Radio Co., 855 35th St. SE, Cedar Rapids, Iowa. CE—Frank M. Davis—1, 2, 6, 10, 24, 52, 63, 69, 77, 78

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Colloid Equip. Co. Inc., 50 Church St., New York 7, N.Y.—75

Colonial Insulator Co., 973 Grant St., Akron 16, Ohio. CE—W. O. Young—38

Colonial Kolonite Co., 2212 Armitage Ave., Chicago 47, Ill.—38

Colonial Radio Corp., 254 Rano St., Buffalo 7, N.Y. CE—H. C. Forbes—63

Colorado Radio Corp., Denver, Col.—25

Colorescent Labs., 914 Westfield Ave., Elizabeth, N.J.—80

Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.—51, 57, 68

Colton & Foss Inc., 927 15th St., NW, Rm. 408, Washington 5, D.C. CE—Roger B. Colton; William L. Foss—20

Columbia B'casting System, 485 Madison Ave., New York 22, N.Y.—10

Columbia Electric Mfg. Co., 4519 Hamilton Ave., Cleveland 14, Ohio—21, 49

Columbia Electronics Inc., 185 E. 122d St., New York 35, N.Y.—12

Columbia Metal Box Co., 260 E. 143rd St., Bronx 51, N.Y.—11, 16

Columbia Nut & Bolt Co., 945 Main St., Bridgeport 3, Conn.—35

Columbia Recording Corp., 1473 Barnum Ave., Bridgeport 8, Conn.—10

Columbia Wire & Supply Co., 5734 N. Elston Ave., Chicago 30, Ill. CE—Ben H. Bradsky—12, 84

Comar Electric Co., 3150 N. Washtenaw Ave., Chicago 18, Ill.—44

Combustion Control Corp., 77 B'way, Cambridge 42, Mass.—27

Commercial Crystal Co. 112 N. Water St., Lancaster, Pa.—23

Commercial Engineering Labs., 4612 Woodward Ave., Detroit 1, Mich.—24

Commercial Equip. Co., 1416 McGee St., Kansas City 6, Mo. CE—M. C. Reefer —23

Commercial Metal Prods. Co., 2251 W. St. Paul, Chicago 47, Ill.—11

Commercial Radio Equip. Co. 321 E. Gregory Blvd., Kansas City 5, Mo. CE—Milton Woodward—23, 31, 32

Commercial Res. Labs. Inc., 20 Bartlett Ave., Detroit 3, Mich. CE—A. W. Brueckner—24

Commonwealth Engineering Co. of Ohio, 1771 Springfield St., Dayton 3, Ohio. CE—C. J. Schlafman—24

Communicating Systems Inc., 203 E. 18th St., New York 3, N.Y. CE—James Conto—2

Communication Coil Co., 2839-2841 N. Narragansett Ave., Chicago 34, Ill. CE—Chester W. Lytle—4, 17, 18, 20, 24, 30, 37, 52, 59, 71, 77

Communication Equip. & Eng. Co., 5646 W. Race St., Chicago 44, Ill. CE—Robert A. Clark, Jr., 4, 20

Communication Measurements Lab., Inc., 120 Greenwich St., New York 6, N.Y. CE—D. A. Griffin—24, 25, 52, 59, 63, 75, 82

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Communication Parts, 1101 N. Paulina St., Chicago 22, Ill. CE—W. R. Wolgram—4, 17, 18, 30, 37, 75, 77

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Communication Prods. Co. Inc., 346 Bergen Ave., Jersey City 5, N.J.—5, 12, 41

Communications Co. Inc., 300 Greco Ave., Coral Gables (34), Fla. CE—G. E. Smith—1, 63, 69, 78

Communications Equip. Corp., 134 W. Colorado Blvd., Pasadena, Calif. CE —Raymond Kimball—63, 69, 78

Compania Argentina de Navigation, Buenos Aires, San Isidro, Argentina CE—Walter White—1, 2, 10, 24, 28, 29, 30, 36, 40, 52, 53, 63, 67-69, 73, 75, 78, 80

Compania International de Radio, SA Buenos Aires, Argentina—10

Compania International de Telefonos Buenos Aires, San Isidro, Argentina

Compania Union Telefonica del Rio Plata, Buenos Aires, Argentina—10

Conant Electrical Labs. 6500 O St., Lincoln 5, Neb. CE—H. B. Conant—67

Concord Radio Corp., 901 W. Jackson Blvd., Chicago 7, Ill. CE—A. Rattram —2, 20, 25, 63

See our advertisement page 135-A

Condenser Corp. of America, 1000 Ham-

(Continued on page 28A)

DX RADIO PRODUCTS

..do a Better Job!

DX MIDGET IF TRANSFORMER
DX LITTLE GIANT AUDIO TRANSFORMER
DX XTALS
DX PERFECT XTALS
FAMOUS DX HIGHEST "Q" ISOSOLOOPS
DX SPECIAL DOUGHNUT TOROID COILS
4"
5"
6½"
DX ALNICO-5 P.M. AND DYNAMIC SPEAKERS

DX RADIO PRODUCTS CO.

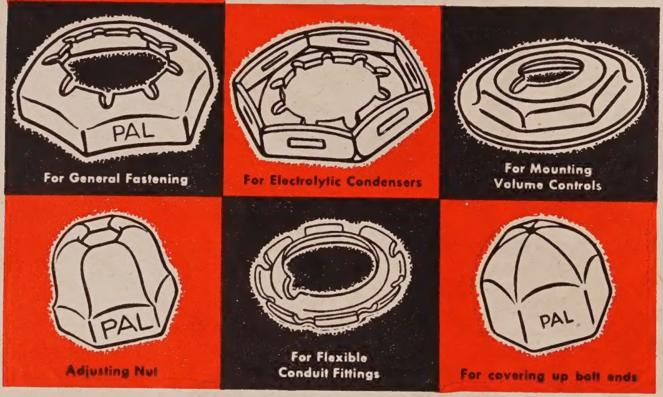
GENERAL OFFICES 1200 N. CLAREMONT AVE., CHICAGO 22, ILL., U.S.A.

DX COILS

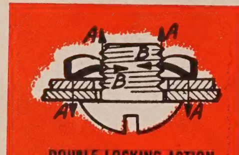
the heart of a good receiver

PAL
For Locking Nuts
For Mounting Coil Forms

Palnut
LOCK FASTENINGS
assure Speedy, Low Cost Assembly!


PAL
For General Fastening
For Electrolytic Condensers
For Mounting Volume Controls
PAL
Adjusting Nut
For Flexible Conduit Fittings
PAL
For covering up bolt ends

Replace slower, costlier 2-piece fastenings



DOUBLE LOCKING ACTION

This cross-section of a regular Palnut shows the unique double locking action typical of all Palnuts. When the Palnut is tightened, its arched slotted jaws grip the bolt like a chuck (B-B), while spring tension is exerted upward on the bolt thread and downward on the part (A-A), securely locking both.

Self-locking Palnuts are especially adapted to fast-moving assembly lines. One Palnut replaces a regular nut and lockwasher, cutting cost of fastenings in half. You handle one part instead of two, reducing assembly time 50%. Palnuts apply speedily with hand, Yankee or power drivers—extra fast when special Palnuts sockets are used.

Palnuts are single thread, spring tempered steel locknuts. They fit in the same area as hex nuts. Their extremely low cost, plus assembly savings, provides substantial economies on mass-production items such as radios, electrical appliances, etc. Palnuts are available in a wide range of types, sizes, finishes and materials.

Send details of assembly for recommendations and samples. Write for detailed folder on Self-Locking Palnuts.

THE PALNUT COMPANY, 94 CORDIER ST., IRVINGTON 11 N. J.

Self-Locking PALNUTS

The One-Piece fastenings with the Double-Locking Action.

(Continued from page 26A)

ilton Blvd., South Plainfield, N.J.—13

Condenser Prod. Co., 1375 N. Branch St., Chicago 22, Ill. CE—M. H. Levenberg—13

Conlan Electric Co., Design & Eng. Div., 1042 Atlantic Ave., B'klyn 16, N.Y. CE—Ira Kamen—9, 20, 24, 25

C. G. Conn Ltd., Elkhart, Ind. CE—L. B. Greenleaf—27, 63, 65

Conn. Tel. & Elec. Div. Great Amer. Industries Inc. 70 Brittania St., Meriden, Conn. CE—W. R. Curtiss—34, 39, 40, 47, 58, 59, 68, 73, 75

Connector Corp. Div. International Resistance Co., 401 N. Broad St., Phila., Pa.—19, 35, 58

Consolidated Diamond Saw Blade Corp., 420 Yonkers Ave., New York 63, N.Y.—23

Consolidated Eng. Corp., Pasadena, Calif. CE—E. E. Huskins—24, 53

Consolidated Molded Prods. Corp., 309 Cherry St., Scranton 2, Pa. CE—C. K. Swartz—38, 51, 57

Consolidated Radio Prods. 350 W. Erie St., Chicago 10, Ill. CE—J. Phalen—27, 42, 77

Consolidated Steel Corp. Ltd., Wilmington, Calif.—45

Consolidated Wire & Assoc. Corp., 524 S. Peoria St., Chicago 7, Ill.—12, 84

Edward J. Content, Roxbury Rd., Stamford, Conn.—20
See our advertisement page 126-A

Continental Carbon Inc., 13900 Lorain Ave., Cleveland 11, Ohio—70

Continental Diamond Fibre, 16 Chapel St., Newark 48, Del. CE—C. S. Rankin—15, 38, 51, 57
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Continental Electric Co., 716 Hamilton St., Geneva, Ill.—67, 80

Continental Electric Co. Inc., 325 Ferry St., Newark 5, N.J. CE—J. H. Hutchings—49, 67, 80

Continental Machines Inc., 1301 Washington Ave. S., Minneapolis 4, Minn.—43

Continental Screw Co., 457 Mt. Pleasant St., New Bedford, Mass.—35

Control Corp., 718 Central Ave., Minneapolis 14, Minn. CE—L. W. Phinney—17, 18, 30, 59, 68, 69, 77, 82

Controls Inc., Hillcrest Rd., Towaco, N.J.—27

Cook Ceramics Mfg. Co., 503 Prospect St., Trenton, N.J.—15

Cook Electric Co., 2700 N. Southport Ave., Chicago 14, Ill. CE—John S. Baker—15, 18, 20, 24, 27, 33, 58, 68, 69, 73

Cook Research Labs., 950 Crane St., Menlo Park, Calif. DE—Leo W. Ruth—43

Copper Wire Prods. Ltd., 137 Roniesvalles Ave., Toronto, Can.—84

Copperweld Steel Co., Glassport, Pa. CE—C. H. Jensen—5, 84

Corbin Screw Div. Amer. Hardware Corp., High St., New Britain, Conn. CE—E. Swain—35

Cornell-Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N.J.

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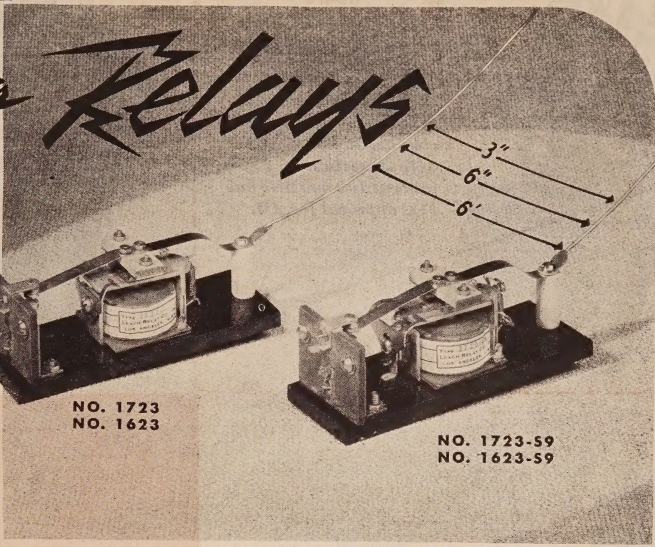
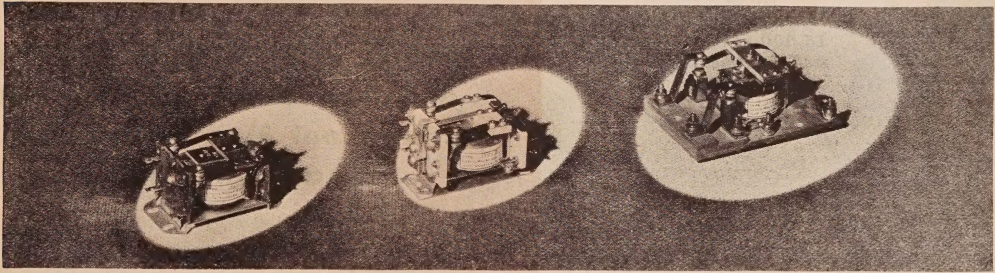
LEACH Radio Relays



ANOTHER FIRST!

A new idea for Antenna Changeover. Simply mount a pair of Type 1723 Relays to match your line spacing. Connect the coils in parallel, or use half-voltage coils in series.

Contacts and terminals mounted on Mycalex and Isolantite SPDT ¼" Pure Silver. Large Air Gap between Contacts. The "S9" type is equipped with SPDT normally open auxiliary contacts, ⅛" diam. Use Type 1723 for operation on AC, Type 1623 for DC.



TYPE NO. 1157 (AC)
TYPE NO. 1057 (DC)

This Circuit Control Relay is designed for general purpose circuit control. Contacts DPDT ¼" Pure Silver, rated 12½ Amps. at 115 VAC non-inductive. Bakelite insulation is used throughout. These relays are exceptionally fast acting. Coils can be supplied 2 to 125 Volts DC, 1.5 Watts, and 6 to 220 Volts AC, 6 V/A.

TYPE NO. 1177-C (AC)
TYPE NO. 1077-C (DC)

A Radio Frequency Relay for general purpose RF relaying. AlSiMag insulation. Main contacts DPDT ¼" Pure Silver. Auxiliary contact SPDT ⅛" Pure Silver. Used extensively for antenna changeover on police, aircraft and amateur radio, and for switching high frequency circuits. DC coils furnished 2 to 125 Volts, 2.5 Watts; AC coils 6 to 220 Volts, 6V/A.

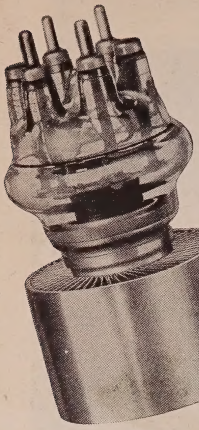
TYPE NO. 1557-MX (AC)
TYPE NO. 1457-MX (DC)

A DPDT Mycalex Insulated Relay somewhat larger than Type 1177-C, has greater surface spacing between terminals, allowing higher voltage to be handled. Used for frequency changing on RF circuits, and for antenna changeover. Contacts ¼" Pure Silver. Coils supplied 2 to 125 Volts DC, 3.5 Watts, or 6 to 220 Volts AC, 6 V/A.

RELAYS SHOWN ABOVE CAN BE SUPPLIED WITH VARIOUS CONTACT ARRANGEMENTS. WRITE FOR DETAILS.

LEACH RELAY CO.

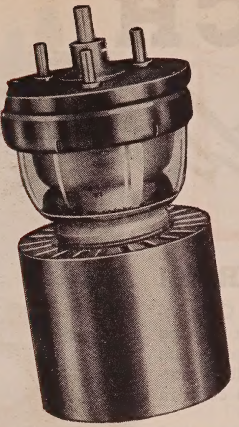
5915 AVALON BOULEVARD, ★ LOS ANGELES 3, CALIF.



WL-473

A POPULAR TRIODE POWER AMPLIFIER

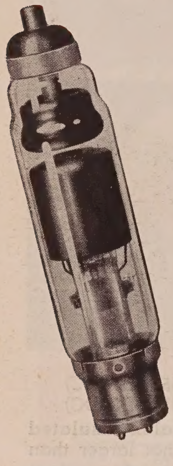
This tube is especially suitable for FM transmitters using grounded-grid circuits. It has a power output rating of 2550 watts at 100 mc. Also has FCC approval for AM.



WL-477R

A NEW FM POWER TETRODE

Two of these are used as the output stage of a 1-kw FM transmitter or as the intermediate stage of a higher-power transmitter.



WL-678

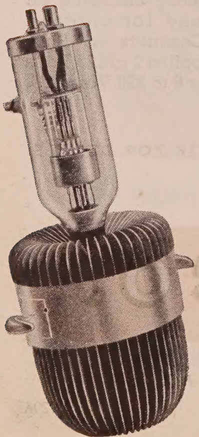
15,000-volt grid controlled rectifier for power supply.

Westin

Offers a complete line of tubes and unexcelled service to Radio Equipment Manufacturers and Broadcasting Stations

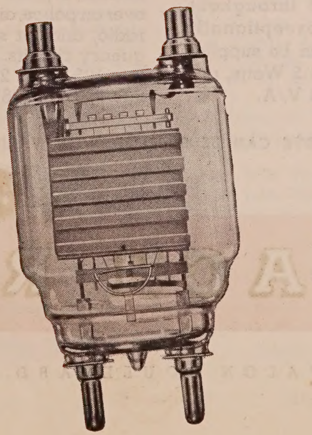
In the complete Westinghouse tube line, are many original Westinghouse developments which have become standards in the radio industry.

Westinghouse



WL-891R

Used as modulator tube in many 5- and 10-kw AM transmitters.



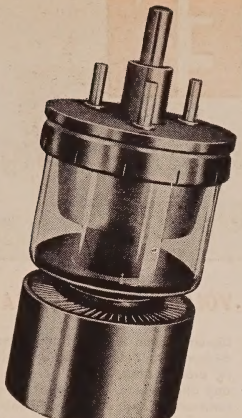
WL-833A

For power output and modulator stage of 1-kw transmitters and intermediate stage of higher-powered transmitters.

WL-478R

A NEW FM POWER TETRODE

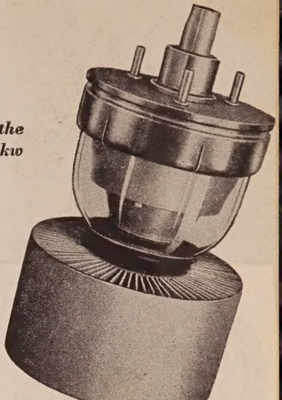
A pair serve as the output stage of a 3-kw FM transmitter or as the intermediate stage of a higher-power transmitter.



WL-479R

A NEW FM POWER TETRODE

A pair of these serve as the output stage of a 10-kw FM transmitter.



ghouse

Manufacturers of broadcast equipment can obtain engineering assistance and complete specifications on all types of tubes through the nearest Westinghouse district office.

Broadcasters can obtain prompt delivery of replacement tubes through the local Westinghouse distributor, and prompt on-the-spot adjustments on Westinghouse tubes requiring replacement during their warranty period.

Ask your Westinghouse district office or distributor for a brand new booklet, "Westinghouse Easy Guide to Electronic Tube Data." Or write Electronic Tube Sales Department, Westinghouse Electric Corporation, Bloomfield, N. J.

Electronic Tubes at Work

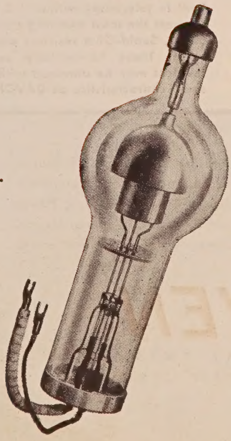
WL-895R

Used as power amplifier in final stage of 50-kw AM transmitters.

Westinghouse
Westinghouse

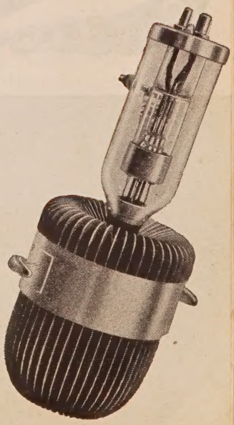
WL-857B

Used as a rectifier for 50-kw transmitters.



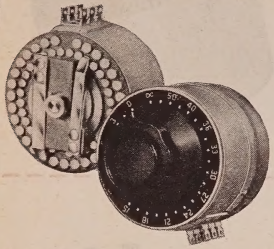
WL-892R

Used as final RF power amplifier in many 5- and 10-kw AM transmitters.



DAVEN

Precision Measuring, Testing and Control Equipment . . .

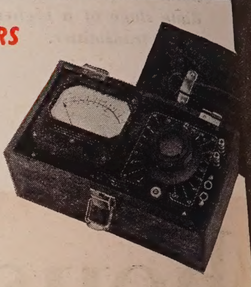


ATTENUATORS

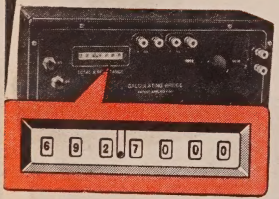
DAVEN offers the most extensive line of standard and special attenuators for radio broadcast, television, sound recording, sound cinema, public address systems, laboratory test equipment and industrial electronic uses. Among the many features of DAVEN attenuators are detent gear for accurate indexing, improved shielding, captive terminal board, special silver contacts, certain stop, separable couplings on dual and multiple unit models.

VOLUME LEVEL INDICATORS

Daven volume level indicators are designed to indicate audio levels in broadcasting, sound recording and allied fields. They are sturdily constructed and correctly damped for precise monitoring. Specialized experience, for almost a quarter century, in the design and development of test equipment has established Daven-Engineered products as "preferred" by leaders in the industry.



TOTALIZING & CALCULATING INSTRUMENTS*



Automatically totalize various dial settings at one point on the face of the unit, where the total can be seen quickly and easily. On units where the decimal point is not fixed, the calculating indicator sets the decimal point in the correct place. Eliminates the possibility of error in calculations. . . . Saves time and effort. Available on bridges, resistance decades, voltage dividers, attenuation networks, etc.

*Patent applied for

POWER OUTPUT METERS

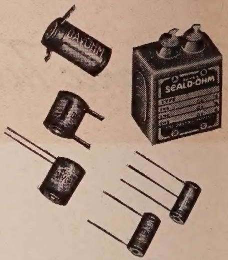
Designed to measure the power output of audio systems. Forty different values of load impedance available between 2.5 and 20,000 ohms providing a convenient method of impedance matching. They may also be used to determine internal impedance or optimum load, to measure insertion loss of a network, to measure noise pick-up level, and to test band width, selectivity and fidelity.

DAVEN ENGINEERED SWITCHES

Featuring extremely low and uniform contact resistance and low noise level. Daven switches are supplied in varied combinations of decks, poles per deck and contacts per deck. Heavy duty, laminated, self-wiping arms need no lubrication; switch contacts and arms are of a special silver alloy (other metals to your specifications); bakelite or ceramic panels; break-before-make or make-before-break wiring.

RESISTORS

Non-inductively precision wire wound SUPER DAVOHM resistors assure optimum permanency of calibration, close accuracy and extremely low temperature coefficients. Supplied in any resistance value from 0.1 ohm to 10 megohms. Built to tolerances within ±0.1%. To meet the most exacting requirements, Seald-Ohm resistors are offered. These hermetically sealed resistors may be obtained with the same characteristics as DAVOHMS.



Other Daven products include: Transmission Measuring Sets, Output Meters, Power Level Indicators, Decade Voltage Dividers, Logarithmic Resistor Boxes, Program Line Equalizers, Ratio Arm Boxes, Power Supplies, Decade Resistance Boxes and Electronic Frequency Meters. Write for the complete Daven Catalog on company stationery.

THE DAVEN CO.
191 CENTRAL AVENUE
NEWARK 4, NEW JERSEY

CONNECTORS
SYNTHETICS FOR ELECTRONICS
STEATITE SOCKETS
SYNTHETICS FOR ELECTRONICS
A-N FITTINGS
COAXIAL CABLES
The Line That Reaches 'Round the World
Depend upon
AMPHENOL
Quality
A-N CONNECTORS
CONNECTORS
PREFOCUSED LAMP RECEPTACLES
MICROPHONE CONNECTORS

With a proven background of honorable service on far-flung battlefronts around the world, Amphenol components—greatly improved by wartime experience and augmented in number, style and type—are now available to normal markets. Simplifying both buying and selling, this wider selection of high quality, tested items can be procured from one manufacturer. To know these popular Amphenol products better—write today for the new Condensed Catalog No. 72.

AMERICAN PHENOLIC CORPORATION
CHICAGO 50, ILLINOIS
In Canada • Amphenol Limited • Toronto

U.H.F. Cables and Connectors • Conduit • Cable Assemblies • Connectors (A-N, U.H.F., British) • Radio Parts • Plastics for Industry

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H. L. Crowley Co. Inc., 1 Central Ave., West Orange, N.J. CE—H. L. Crowley—13, 15, 22, 44, 45, 51, 71
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Crystal Lab. Inc., 801 W. Maple St., Wichita, Kan.—23
Crystal Mfg. Co., 1725 W. Diversey Pkwy., Chicago 14, Ill.—23
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Geo. K. Culbertson Co., 5133 Juanita Ave., Minneapolis 10, Minn. CE—G. K. Culbertson—65
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Curle Radio Supply & Sound Service, 825 Cherry St., Chattanooga 2, Tenn.—25
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Dayton Acme Co., 930 York St., Cincinnati 14, Ohio—65, 68, 75
Dayton Insulating Molding Co., 418 E. First St., Dayton, Ohio—57
Dayton Rogers Mfg. Co., 2835 12 Ave. S., Minneapolis 7, Minn.—35
Deal Slide-Lock Devices, Inc., 25 Bruckner Blvd., N.Y. 54, N.Y.—35
Dearborn Glass Co., 2414 W. 21st St., Chicago 8, Ill. CE—V. Gilstrad—35
Deepfreeze Div., Motor Products Corp., 2310 Davis St., N. Chicago, Ill.—43
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Delta Electrical Instrument Co., 1911 W. Pico Blvd., Los Angeles 6, Calif. CE—W. S. Richards—46, 70
Delta Products Co., 120 Cedar St., New York 6, N.Y. CE—I. Becker—41, 83
De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y. CE—Leonard E. Sherbin—1, 4, 5, 12, 19, 20, 31, 52, 59, 62, 75, 79
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Detroit Paper Products Co., 5800 Domine St., Detroit 11, Michigan—57
Detroit Power Screw Driver Co., 2801 W. Fort St., Detroit 16, Michigan—43
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De Vry Corp., 1111 Armitage Ave., Chicago 14, Ill. CE—E. W. D'Arcy—2, 42
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Diamond Drill Carbon Co., 53 Park Row, New York 7, N.Y.—23
Diamond Instrument Co., Wakefield, Mass., CE—Alan Webster—19
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Diamond Straw and Machinery Co., 114 E. 16th St., New York 3, N.Y.—38
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Dimco Plastics, 297 E. 6th St., Dayton 2, Ohio. CE—W. E. Eckert—5, 35, 51, 57

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Electrolytic Capacitor
"BEAVER"
CAT. NO. BR 845
CORNELL-DUBILIER CAPACITORS

DOING ONE THING WELL

Thirty-six years ago, in one small plant, we set out to do just one job—and do it well. Today, in six large plants—we're still at it—doing one thing well.

We like to feel that it is for this reason that more engineers specify C-D Capacitors. And for this reason too, that there are more C-D's in use today, than any other make.

This accumulative engineering and manufacturing "know-how" has enabled us to design over one hundred thousand different types of capacitors in the past year. Actually, these designs encompassed every conceivable type of capacitor from the tiny tubulars used in the "Proximity Fuze" to the giant tank units used in the world's most powerful transmitters.

C-D Capacitors—of whatever type you may require—will add quality and dependability to *your* products. Creative, far-sighted engineering, extensive plant facilities—plus the knowledge and techniques of over thirty-six years of specialization—are yours to command. Catalog on request. Cornell-Dubilier Electric Corporation, South Plainfield, New Jersey. Other plants at New Bedford, Worcester, Brookline, Mass.; and Providence, R. I.

Cornell-Dubilier World's Largest Manufacturer of **Capacitors**

MICA • DYKANOL • PAPER • ELECTROLYTICS

Eastern Pumps . . . .

FOR ELECTRONIC, ELECTRICAL AND CHEMICAL APPLICATIONS

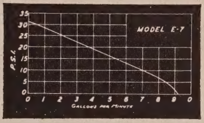
Eastern builds over 600 different variations of centrifugal and positive pressure pumps ranging in size from 1/30 to 3/4 H.P. as standard units. In addition Eastern designs and builds special models, in quantities ranging from twenty-five to many thousands for the aviation, electrical, electronic, laboratory and other special fields. Because of their compactness and light weight compared with their remarkable performance, Eastern pumps are particularly adaptable to any application where space and portability are factors. Write us concerning your pumping needs.

Illustrated are three standard models for completely different applications.

MODEL E-7 SINGLE STAGE CENTRIFUGAL PUMP . . . is a high speed, light duty model designed for intermittent use . . . where compactness, light weight and minimum size are important factors. It is equipped with a Universal motor. Equipped with either stuffing box or a mechanical rotary seal. The performance chart of model E-7 is shown here.

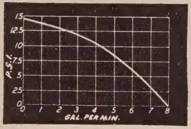
Size: 9" x 4" x 4"
Weight: 8 lbs.
Power: 1/5 H.P.
Motor: General Electric Universal Motor
Alloys: Available in Cast Iron, Bronze, Stainless Steel, Monel Metal and Hastelloy

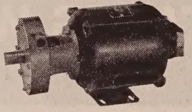
Model E-7



Model D-11 is a ruggedly constructed general purpose centrifugal model designed for continuous duty under hard usage. Its availability with motors of various frame enclosures and current specifications makes it readily adaptable over a wide range of pumping applications.

Motor is 1/8 H.P. heavy duty General Electric, induction type. Semi-enclosed motors are recommended for general service. All can be supplied with sleeve or ball bearings. Available with either stuffing box or rotary seal.





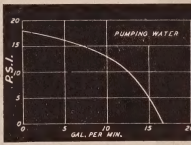
Model D-11

Size: 10¾" x 5" x 5½"
Weight: 20 lbs.
Power: ⅛ H.P.
Alloys: Available in Cast Iron, Bronze, Stainless Steel, Monel Metal and Hastelloy C.

Model F is a heavy duty centrifugal pump designed for continuous operation in applications requiring sizeable volumes or pressures with a minimum expenditure of size and weight. Powered by a General Electric induction motor for long, silent, trouble free operation. Available with either stuffing box or mechanical rotary seal. All motor enclosures, including explosion proof Class I, Group D, are available.

Size: 11½" x 6½" x 6¾"
Weight: 35 lbs.
Power: 1/3 H.P.
Alloys: Available in Cast Iron, Bronze, Stainless Steel, Monel Metal and Hastelloy.

Model F

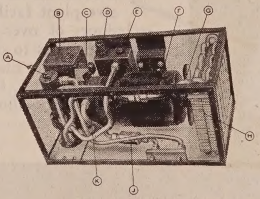


Write for new pump catalog describing other standard models and showing construction details and performance charts.

EASTERN HEAT DISSIPATING UNIT

This Unit is for use with television, radar, short wave radio, high pressure mercury lamps, X-ray tubes, induction heating, etc. Developed for military requirements in radar and electronic tube cooling problems. Designed in various sizes and capacities, some with the close heat control range of 2 degrees C. Successful in ground, water and airborne service, they combine rugged construction, compactness and light weight.

Model illustrated dissipates up to 1200 watts with constant controlled temperature, irrespective of surrounding temperatures, within 2 degrees C. Complete with Thermostat control, Thermostatic valves and flow switch. Eastern has built airborne units of much smaller sizes and industrial units of much larger sizes and capacities. Unit shown: 16" x 7½" x 7½". Available in Steel, Bronze or Aluminum. Other models dissipate up to 5000 watts.



OPEN VIEW

A. Thermo flow-regulator
B. Reservoir
C. Flow Switch
D. Thermostat
E. Auxiliary Heater
F. Motor
G. Fan
H. Radiator
J. Filter
K. Pump

Eastern's experience in solving heat control problems, especially where compactness and light weight are necessary, makes it logical to discuss heat control applications with them. If you are designing equipment that calls for heat dissipation or the close control of operating temperatures, Eastern will design and build the entire unit for you to meet your requirements.

EASTERN ENGINEERING COMPANY

186 FOX STREET NEW HAVEN 6, CONN.

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Dinion Coil Co., Inc., Caledonia, N.Y. CE—I. W. Armstrong—17, 18, 77
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Distillation Products Inc., 755 Ridge Rd. W., Rochester 13, N.Y.—60, 80

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Joseph Dixon Crucible Co., 167 Wayne, Jersey City 3, N.J.—26, 45

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Dominion Sound Equipment, Ltd., 1620 Notre Dame St. W., Montreal, P.Q., Canada. CE—H. S. Walker—2, 8, 12, 20, 47, 49, 65, 67

Dongan Electric Mfg. Co., 2977 Franklin St., Detroit 7, Mich. CE—Carl C. Dresser—77

Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill. CE—Dudley Gray—1, 4, 12, 20, 24, 31, 48, 63, 78
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John Dougherty, 74 N. Willow St., Montclair, N.J.—24

L. A. Dow, 2208 4th Ave., Seattle 44, Washington—23

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Frederick J. Drake & Co., 600 W. Van Buren St., Chicago 7, Ill.—9

Drake Electric Works, Inc., 3656 Lincoln Ave., Chicago 13, Ill.—43

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Driver-Harris Co., 201 Middlesex St., Harrison, N.J. CE—F. Bash—45, 84

Wilbur B. Driver Co., 150 Riverside Ave., Newark 4, N.J. CE—Herbert J. Hahn—45, 84

Dual Remote Control Co., 31776 Cowan Rd., Wayne, Mich. CE—S. L. Glamb—35, 43, 73

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Frank I. Dufrane Co., Inc., 1138 Howard St., San Francisco 3, Calif.—2

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J. CE—Dr. P. S. Christaldi—24, 48, 52, 53, 62, 63, 75, 78, 80
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Dunbar Brothers Co., Div. of Associated Spring Corp., 76 South St., Bristol, Conn.—35

Struthers Dunn, Inc., 1321 Arch St., Philadelphia 7, Pa.—68

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Announcing THE NEW SPERRY *Microline**

As a reading glass aids visual search, so MICROLINE test and measurement equipment provides means for making all measurements at microwave frequencies.

Sperry announces a comprehensive line of microwave test and measurement equipment for laboratory and field use. The new line... the MICROLINE...is the outgrowth of years of research and experience in modern microwave techniques beginning with the development of the Klystron.

Write our Special Electronics Department for further information.

Available now:

WAVEMETERS • WATTMETERS
BARRETTER ELEMENTS AND MOUNTS
DIRECTIONAL COUPLERS
KLYSTRON SIGNAL SOURCES
STANDING WAVE DETECTORS
ATTENUATORS
IMPEDANCE MATCHING EQUIPMENT
WAVEGUIDE AND COAXIAL COMPONENTS

Visit the Sperry booth at the I.R.E. Convention

*TRADE MARK

SPERRY GYROSCOPE COMPANY, INC. GREAT NECK, N. Y.

★

Division of the Sperry Corporation

LOS ANGELES • SAN FRANCISCO • SEATTLE • NEW ORLEANS
CLEVELAND • BROOKLYN • HONOLULU

GYROSCOPICS • ELECTRONICS • RADAR • AUTOMATIC COMPUTATION • SERVO-MECHANISMS

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Duotone Co., Inc., 799 Broadway, New York 3, N.Y. CE—Stephen Nester—65

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Durez Plastics & Chemicals, Inc., 3210 Walck Rd., North Tonawanda, N.Y. —41, 57, 83

Durite Plastics, 5000 Summerdale Ave., Philadelphia 24, Pa.—57

DX Radio Products Co., 1200 North Claremont Ave., Chicago 22, Ill. CE—John Laban—4, 14, 17, 18, 23, 30, 37, 38, 42, 44, 55, 77
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Dymac, Inc., 2329 Main St., Buffalo 14, N.Y.—25

Dynamic Air Engineering, Inc., 1619 S. Alameda St., Los Angeles 21, Calif. CE—V. W. Sharpe—8, 50

Dynamic Hearing Aids, Inc., General Motors Bldg., 57th St. & Broadway, Suite 863, New York 19, N.Y. CE—B. V. Freidmann—2

Dzus Fastener Co., Inc., Babylon, N.Y. CE—William Dzus—35

Eagle Electric Mfg. Co. Inc. 23-10 Bridge Plaza S., L.I.C. 1, N.Y. CE—Louis Ludwig—33, 70

Eagle Pencil Co., 703 E. 13th St., New York 9, N.Y.—26

Eagle Signal Corp., 202 20th St., Moline, Ill.—27, 73

Eastern Air Devices Inc., 585 Dean St., B'klyn 17, N.Y. CE—L. C. Pratt—8, 50

Eastern Amplifier Corp., 794 E. 140th St., New York 54, N.Y. CE—Leonard A. Meyerson—2, 77
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Eastern Electronics Corp., 41 Chestnut St., New Haven 11, Conn. CE—Roland S. Bruneau—2, 24, 27, 46, 50, 52, 62, 63, 70, 73, 75, 79

Eastern Eng. Co., 186 Fox St., New Haven 6, Conn.—36, 43, 60
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Eastern Etching & Mfg. Co., Chicopee, Mass.—57

Eastern Mike-Stand Co., 56 Christopher Ave., B'klyn 12, N.Y. CE-S. Sherman—2, 47, 58

Eastern Specialty Co., 3617 N. 8th St., Philadelphia 40, Pa. CE—R. A. K. Fleischmann—35, 43, 54, 70

Eastman Kodak Co., 343 State St., Rochester 4, N.Y.—27

Eberhard Faber Pencil Co., 37 Greenpoint Ave., B'klyn 22, N.Y.—26

Hugh H. Eby Inc., 18 W. Chelten Ave., Philadelphia 44, Pa. CE—L. R. Wanner—12, 19, 35, 39, 51, 57, 58, 71

Ecco High Frequency Co., 7020 Hudson Blvd., N. Bergen, N.J. CE-T. A. Feehan—24, 36

Echophone Radio Co., 540 N. Michigan Ave., Chicago 11, Ill.—63

Eckstein Radio & Telev. Co. Inc., 914-16-18 LaSalle Ave., Minneapolis 2, Minn. CE—E. A. Eckstein—25

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Elco Tool & Screw Corp. 1800 B'way, Rockford, Ill.—35

Eldeen Co., 610-618 W. National Ave., Milwaukee 4, Wis.—65

Electric Appliances Corp., 120 W. North St., Indianapolis, Ind.—23

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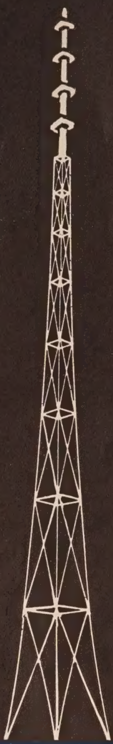

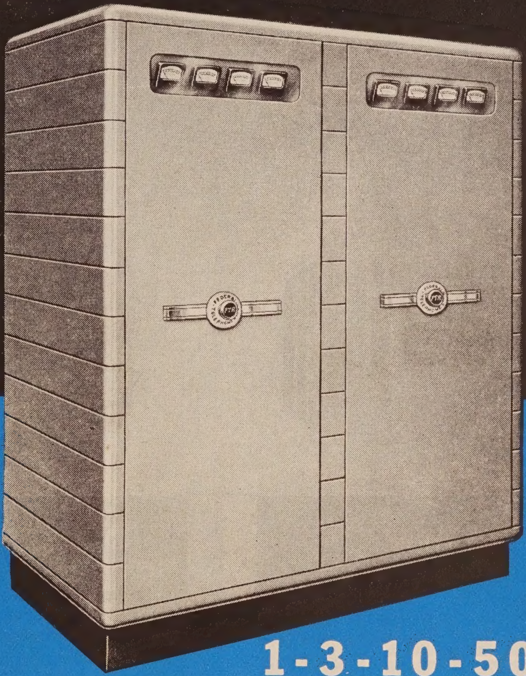

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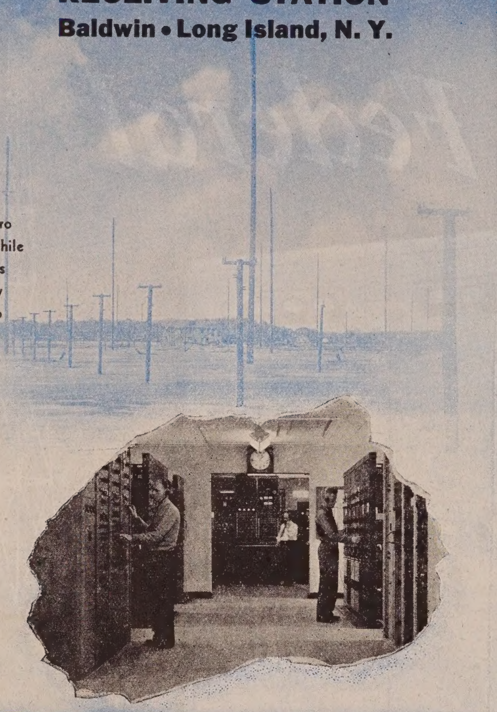

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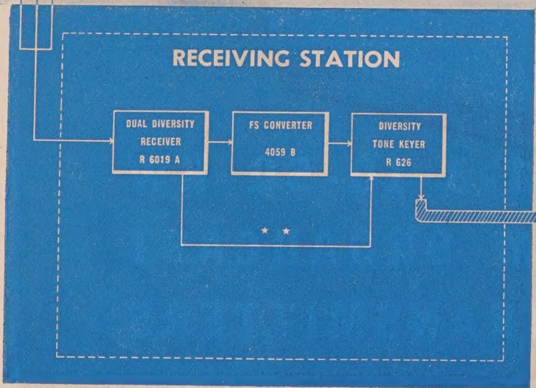
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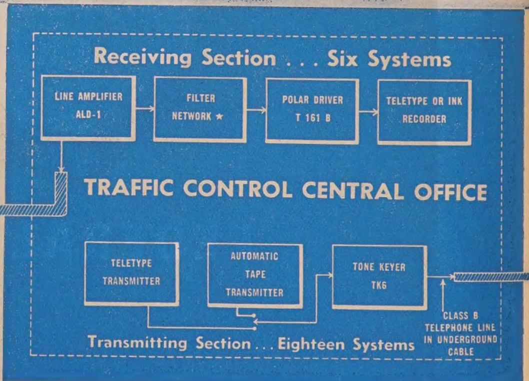
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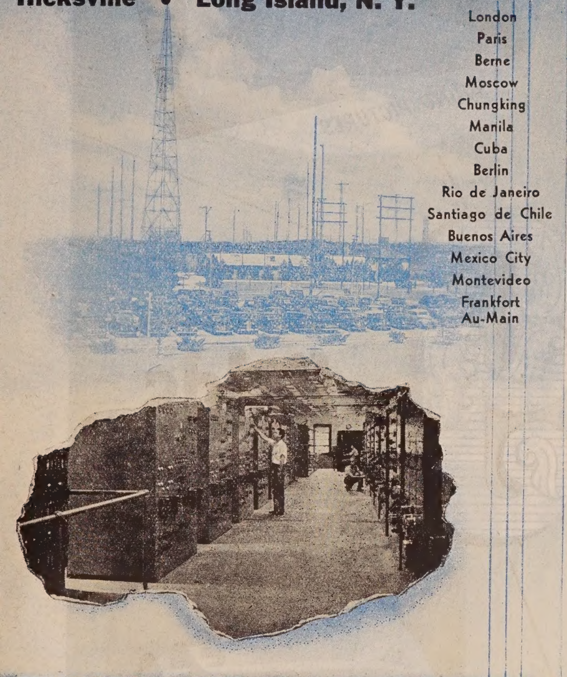
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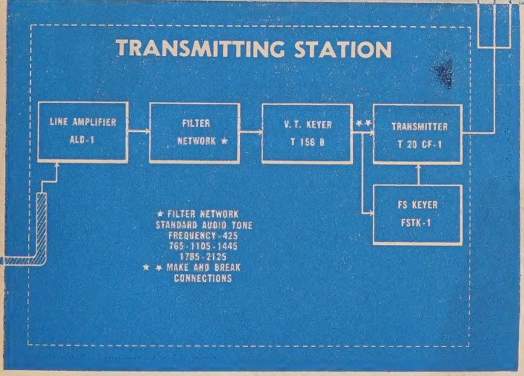
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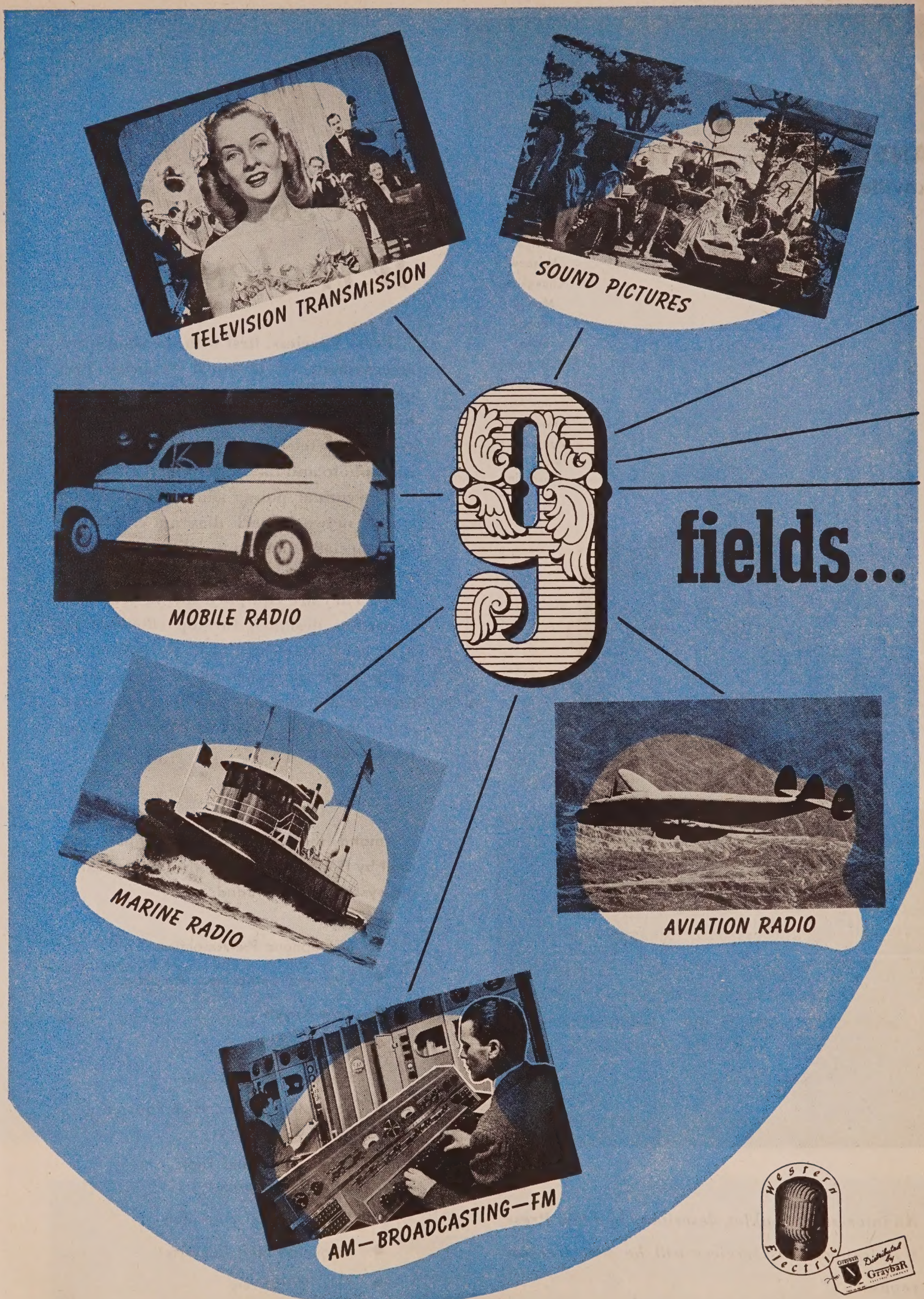
- Frequency Shift Converters
- Polar DC Drivers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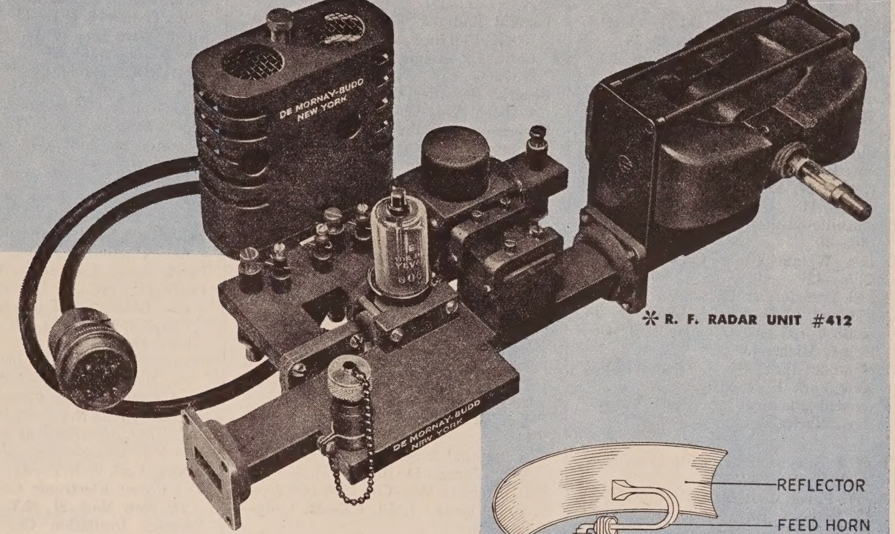
PACKAGED R. F. RADAR ASSEMBLY ELIMINATES DESIGN HEADACHES



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The DeMornay-Budd packaged R. F. Unit provides a complete R. F. assembly for microwave radar. It is now possible to obtain as standard items all the microwave R. F. components necessary in the fabrication of a complete radar—DeMornay-Budd Standard Transmission Line Components plus packaged R. F. Unit.

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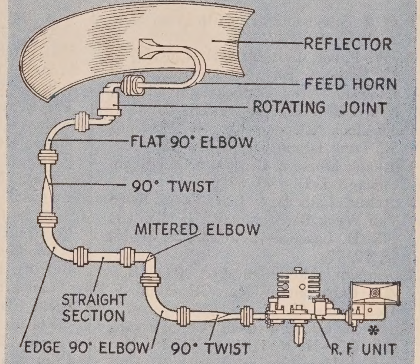
We offer complete laboratory research facilities and have available such production test equipment as: Standing Wave Detectors, Calibrated Attenuators, Slug Tuners, Power Supplies, Square Wave Modulators, in addition to transmission line components shown in diagram above. Write for information or catalog.



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FOR
97% OF ALL
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Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. CE —E. N. Wendell—1-5, 10, 12, 17, 23, 24, 29-31, 36, 39, 40, 51, 62, 63, 67-69, 73, 77, 78, 80, 82, 84
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Federated Metals Div. AS & RC, 1366 W. Lake St., Chicago 7, Ill. CE—A. F. Sternad—72
Federated Purchaser Inc., 80 Park Pl., New York 7, N.Y.—25
Feick Mfg. Co., Div. Detroit Aircraft Prod., Inc., 10240 Meech Ave., Cleveland 5, Ohio—43
Felker Mfg. Co., Torrance, Calif.—23, 43
G. Felsenthal & Sons, 4100 West Grand Ave., Chicago 51, Ill.—35, 51, 57
Felt Products Mfg. Co., 1504-14 Carroll Ave., Chicago 7, Ill. CE—M. Cody—38
The Felters Co., 210 South St., Boston, Mass.—38
Fenwal Inc., Ashland, Mass.—73
Ferranti Electric Co., 30 Rockefeller Plaza, New York 20, N.Y. CE—W. R. Spittal—1, 2, 16-18, 22, 27, 28, 30, 46, 54, 59, 61, 67, 75, 77, 81
Ferris Instrument Co., 110 Cornelia St., Boonton, N.J.—24, 27, 75
Fidelity Electric Co., 332 N. Arch St., Lancaster, Pa.—21, 49, 50
Field Electrical Inst. Co., 109 E. 184th St., Bronx 53, N.Y. CE—M. Rosenfield—27, 79
Film Crafts Engineering Co., Cinetech Co., 26 W. 25th St., New York 10, N.Y.—24
Finch Telecommunications, Inc., 10 East 40th St., New York 16, N.Y. CE —R. E. Mathes—24, 29, 34, 62
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Firestone Tire & Rubber Co., 12 S. Main St., Akron 17, Ohio—43
H. G. Fischer & Co., 2323 Wabanasia Ave., Chicago 47, Ill.—80
Fischer Corp., 703 Ivy St., Glendale, Calif.—27, 36
Fischer Distributing Co., 222 Fulton St., New York 7, N.Y.—25
Fischer & Porter Co., Hatboro, Pa.—27
Fish-Schurman Corp., 230 E. 45th St., New York 17, N.Y.—43, 51A
Fisher's Blend Station, Inc., Skinner Bldg., Seattle 1, Washington CE—F. J. Brott—10
Fisher-Pierce Co., 60 Ceylon St., Boston 21, Mass. CE—Dr. E. M. Pritchard —27, 82
Fisher Research Lab., 1961-63-65 University Ave., Palo Alto, Calif. CE—Gerhard R. Fisher—1, 4, 24, 59, 63, 78
Fisher Scientific Co., 711 Forbes St., Pittsburgh 19, Pa.—24, 38, 46
Fishwick Radio Co., 423 Colorado Bldg., Washington 5, D.C. CE—M. F. Robertson—3, 4, 5
B. J. Fitzner Co., 153 E. Elizabeth, Detroit 1, Mich.—25
M. M. Fleron & Sons, Inc., 113 N. Broad St., Trenton 8, N.J.—15, 38, 40, 84
Flexo Wire Co., 70 W. First St., Oswego, N.Y.—12, 84
Flint Broadcasting Co., Flint, Mich.—10
A. G. Flintze Co., Westchester, Ill.—42
Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.—35, 43
Florida Broadcasting Co., Jacksonville, Fla.—10
The Fluor Corp., Ltd., 2500 S. Atlantic Blvd., Los Angeles 23, Calif.—24
Follansbee Steel Corp., 3rd & Liberty Ave., Pittsburgh 22, Pa.—22, 45
Fonda Gage Co., Stamford, Conn.—43
Foote Mineral Co., Germantown Trust Co. Bldg., 10 East Chelten Ave., Philadelphia 44, Pa. CE—W. M. Raynor—22, 45
Foote, Pierson & Co., Inc., 73 Hudson St., Newark 4, N.J.—2, 24, 27, 40, 78
Ford Radio & Mica Corp., 538 63rd St., Brooklyn 20, N.Y.—35, 38
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Foredom Electric Co., 27 Park Place, New York 7, N.Y.—43
The Forest Electronic Co., 320 E. 65th St., New York 21, N.Y.—2, 12, 27, 64
Formica Insulation Co., 4614 Spring Grove Ave., Cincinnati 32, Ohio—57
The Forsberg Mfg. Co., 125 Seaview Ave., Bridgeport 43, Conn.—43
John M. Forshoy, 27 Park Place, New York 7, N.Y.—25
Fort Orange Radio Distributing Co., 356 Broadway, Albany, N.Y.—25
The A. P. Foster Co., 630 Reading Rd., Reading (Cincinnati) 15, Ohio. CE—R. K. Bolenbaugh—20, 27, 36, 77, 82
Don Foster, 335 Beech Ave., Wyoming 15, Ohio—20, 24
The Foxboro Co., Neponset Ave., Foxboro, Mass.—27, 34
France Mfg. Co., 10325 Berea Road, Cleveland 2, Ohio—67, 77
Franklin Fibre-Lamitex Corp., 190 E. 12th St., Wilmington, Del.—38, 57
A. W. Franklin Mfg. Corp., 175 Varick St., New York 14, N.Y. CE—Joseph M. Vananzi—4, 22, 35, 56, 58, 71, 73
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Benjamin Franklin Paint & Varnish Co., 4820 Langdon St., Philadelphia 24, Pa. —41
Franklin Transformer Mfg. Co., 65 22nd Ave. N.E., Minneapolis 11, Minn.—23, 50, 75, 77
Franklin X-Ray Co., 2100 Arch St., Philadelphia 3, Pa.—80
George E. Fredericks Co., Bethayres, Pa. CE—Jens Sivertsen—24, 27, 75
Fredericksburg Broadcasting Corp., Fredericksburg, Virginia—10
Freed Radio Corp., 200 Hudson St., New York 13, N.Y. CE—Murry Weinstein—63

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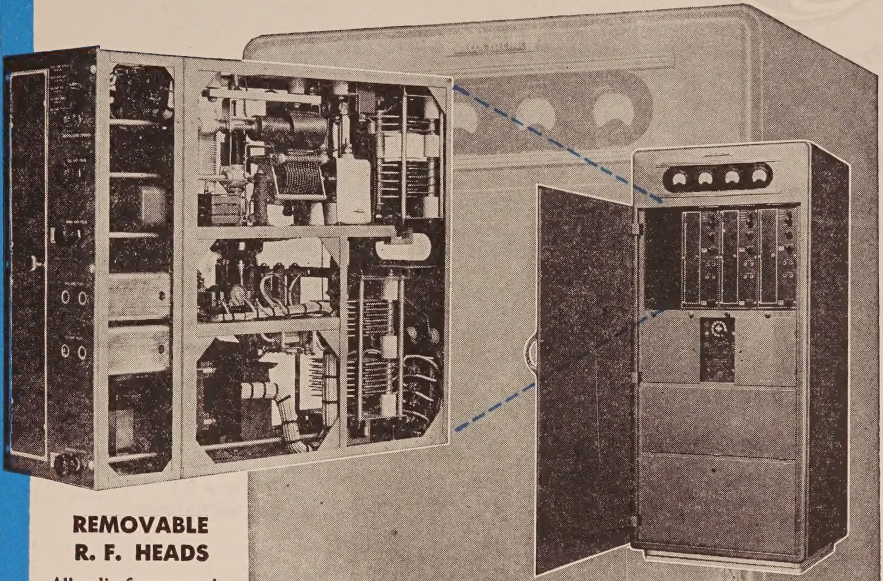
Wilcox Type 99A Transmitter



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All radio frequency circuits are included in the 2–20 Mc. R.F. head shown above. All connections to the transmitter cabinet are by means of plugs and receptacles.

A medium power transmitter, designed particularly for aeronautical service. Equally adaptable to other fixed services. Check these features for their application to your communication problems:

★ Four transmitting channels, in the following frequency ranges:
125–525 Kc. Low Frequency.
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Other frequencies by special order.

★ Simultaneous channel operation, in following maximum combinations:
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2 Channels telephone.
1 Channel telephone, 2 Channels telegraph.

★ Complete remote control by a single telephone pair per operator.

★ 400 Watt plus carrier power.

★ Low first cost. Removable radio frequency heads are your protection against frequency obsolesence.

★ Reliability backed by two years of engineering research, one year of actual field operation.

★ Available with all-steel, or wood pre-fabricated transmitter house complete with primary power, antenna, and ventilation fittings.

★ Not a "post-war plan," but a field-tested transmitter now in production.

An inquiry on your letterhead outlining your requirements will bring you complete data.

WILCOX ELECTRIC COMPANY, INC.

Manufacturers of Radio Equipment

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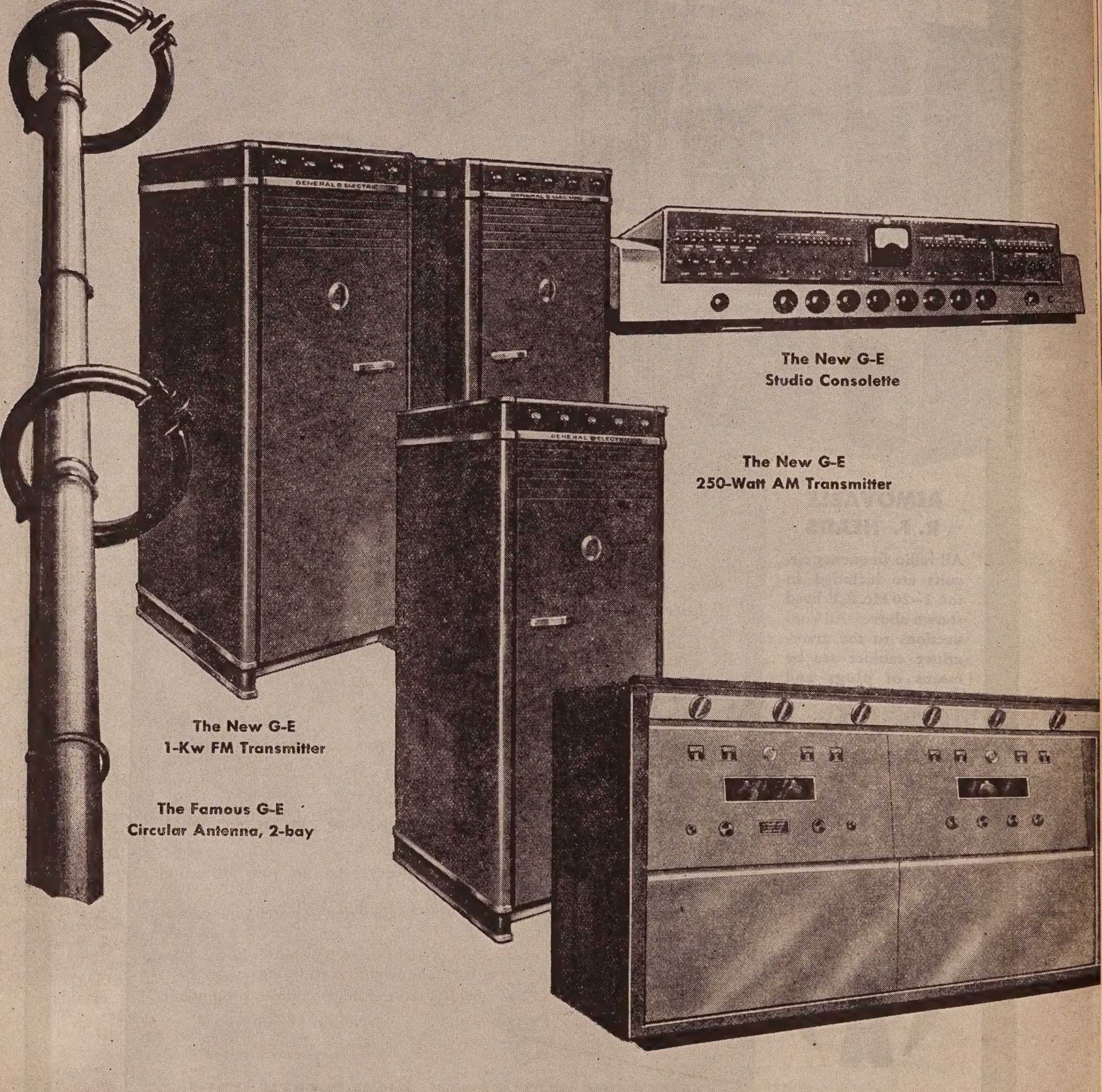

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The New G-E
250-Watt AM Transmitter

The New G-E
1-Kw FM Transmitter

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160-D9-6814

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- **Television Transmitters**
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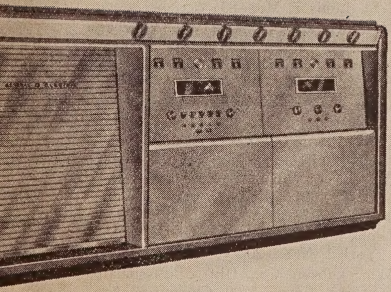
- **Station Lighting, Heating, Air-Conditioning**

GENERAL ELECTRIC offers to the broadcast industry the most comprehensive line of station equipment in the world—FM, Television, AM, and International transmitters, complete aural and visual equipment for station and studio, entire antenna systems, electronic tubes for every purpose, studio-to-transmitter relay equipment, Micro-Tel and Intra-Tel systems, station lighting, heating, air-conditioning, power equipment, and switchgear.

Here is broadcast equipment that opens a brilliant era with new basic accomplishments in modulation quality, extended frequency response, and lower carrier noise levels. Circuits backed by extensive research and long experience are your guarantee of reliable operation. Complete accessibility, centralized control systems, fewer tubes and fewer parts are your assurance of minimum supervision and lower maintenance. Ruggedness, compactness, and flexibility of design meet every installation requirement. G-E broadcast equipment is handsomely styled to match the appearance of the finest, most modern station.

For maximum on-the-air reliability, for lower equipment cost per hour of service, specify G. E. throughout your station. You benefit directly through General Electric's coordinated equipment design which assures you properly unified apparatus. And you buy one standard of high quality backed by one source of responsibility. *Electronics Dept., General Electric Company, Schenectady 5, N. Y.*



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Seattle, Wash.
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840 S. Canal St.

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For earliest possible delivery of your broadcast equipment, place your order now.

ANTENNAS • ELECTRONIC TUBES • HOME RECEIVERS

FM • TELEVISION • AM *See G.E. for all three!*

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Freed Transformer Co., 72 Spring St., New York 12, N.Y. CE—David Gurevics—2, 17, 24, 28, 30, 46, 52, 63, 75, 77, 82
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Freeland & Olschner Products, Inc., 611 Baronne St., New Orleans 13, La. CE—W. T. Freeland—80
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Frequency Measuring Co., 1816 Walnut St., Kansas City, Mo.—23
Frober-Faybor Co., Chagrin Falls, Ohio—27
Froiland Mfg. Co., 430 St. James Ave., Springfield 4, Mass.—45
Frontier Broadcasting Co., Waco, Tex.—10
Frostrode Products, 19929 Exeter, Detroit 3, Mich.—43
M. P. Frutchey, Jr., 14 Marshall St., Caldwell, N.J. CE—M. P. Frutchey, Jr.—65, 66
Charles A. Fuchs Bros., 13 Molineau Pl., Roosevelt, L.I., N.Y.—43

G-M Labs., Inc., 4314-26 N. Knox Ave., Chicago 41, Ill.—27, 46, 68
G. M. Mfg. Co., 50 W. 3rd St., New York 12, N.Y.—75
Gaertner Scientific Corp., 1211 Wrightwood Ave., Chicago 14, Ill.—27, 75
Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago 51, Ill. CE—Don H. Mitchell—63, 64, 78
Gamma Instrument Co., Inc., 95 Madison Ave., New York 16, N.Y.—27
Garden City Lab., 2744 W. 37th Pl., Chicago 32, Ill.—72
Gardiner-Levering Co., Haddon Hghts., N.J.—40
Gardiner Metal Co., 4824 S. Campbell Ave., Chicago 32, Ill., CE—A. F. Stein 72
Gardner Electric Mfg. Co., 4227 Hollis St., Oakland 8, Calif. CE—S. M. Gardner—77
Garfield Mfg. Co., Garfield, N.J. CE—L. R. Egg—51
Garner Electronics Corp., 1100 W. Washington St., Chicago 7, Ill. CE—Fred E. Garner—4, 24, 31
Garod Radio Corp., 70 Washington St., Brooklyn 1, N.Y. CE—Barnet S. Trott—63, 64
Garrard Sales Corp., 401 Broadway, New York 13, N.Y. CE—Wm. Carduner—25, 50, 55, 64
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George K. Garrett Co., Inc., D & Tioga Sts., Philadelphia 34, Pa.—35
George W. Gates & Co., Inc., Hempstead Turnpike, Franklin Square, L.I., N.Y.—27
Gates Radio Co., Quincy, Ill. CE—F. O. Grimwood—2-5, 10, 17, 24, 28, 32, 37, 48, 55, 59, 63, 65, 67, 69, 78
Gear Specialties, 2635 West Medill Ave., Chicago 47, Ill.—35
Geko Chemical Co., 143-05 Franconia Ave., Flushing, L.I., N.Y.—72
Gemloid Corp., 7910-30 Albion Ave., Elmhurst, L.I., N.Y.—35, 51
General Aniline & Film Corp., Hotel Marguery, 270 Park Ave., New York 17, N.Y.—22
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General Aniline & Film Corp., Ozalid Products Div., Johnson City, N.J.—26
General Cable Corp., 420 Lexington Ave., New York 17, N.Y. CE—I. T. Faucett—12, 84
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.—35, 38, 41, 83
General Ceramics & Steatite Corp., Plant No. 3, Crows Mill Road, Keasbey, N.J.—13, 15, 35, 38
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass. CE—T. Mitchell Hastings, Jr.—1, 2, 4, 24, 29, 31, 52, 62, 63, 65, 75, 78, 82
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General Control Co., 1200 Soldiers Field Road, Boston 34, Mass. CE—E. B. Farmer—24, 27, 73
General Controls Co., 801 Allen Ave., Glendale 1, Calif. CE—W. A. Ray—27, 68
General Crystal Corp., 1776 Foster Ave., Schenectady 8, N.Y.—23, 31
General Dry Batteries Co., 13100 Athens Ave., Cleveland 7, Ohio—7
General Dry Batteries of Canada, Ltd., Toronto, Ontario, Canada—7
General Electric Co., Electronics Dept., 1 River Road, Schenectady 5, N.Y. CE—O. W. Pike—1, 2, 4, 10-13, 15, 21, 23, 27, 28, 30, 31, 33, 36, 38, 41, 44, 46-54, 56-59, 62, 63, 67-69, 73, 75, 77-80, 82-84.
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General Electric Supply Co., Los Angeles, Calif.—25
General Electric X-Ray Corp., 2012 Jackson Blvd., Chicago 12, Ill.—80
General Electromedical Corp., Kenosha, Wis.—24
General Electronic Apparatus Corp., Subdiv. of General Instrument Corp., 829 Newark Ave., Elizabeth 3, N.J. CE—B. N. Fisher—42
General Electronics Inc., 1819 Broadway, New York 23, N.Y. CE—D. E. Replogle—13, 80
General Electronics Inc., 1917 N. Springfield, Chicago 47, Ill.—80
The General Industries Co., Elyria, Ohio. CE—Rudolph Frey; D. L. Boyd—50, 64, 65
General Instrument Corp., 829 Newark Ave., Elizabeth 3, N.J. CE—B. N. Fisher—14, 42, 64
General Insulated Wire Corp., 53 Park Place, New York 7, N.Y.—12, 84
General Insulated Wire Works, Inc., 69-105 Gordon Ave., Providence 5, R.I. CE—M. R. Cottrill—12, 84
General Laminated Products, Inc., 175 Varick St., New York 14, N.Y. CE—Gunnard Swedlund—51
General Lead Batteries Co., 125 Chapel St., Newark 5, N.J.—7
General Magnetic Corp., 2126 E. Fort St., Detroit 7, Mich. CE—J. R. Hoven—44
General Motors Corp., Sunlight Electrical Div., 523 Dana Ave., Warren, Ohio—12
General Paper Tube Co., 430 E. Chelton Ave., Philadelphia 44, Pa.—38
General Pencil Co., 67 Fleet St., Jersey City, N.J.—26
General Phonograph Corp., Putnam, Conn.—65
General Piezo Co., 2614 State St., Kansas City, Kan.—23
General Plate Div., Metals & Controls Corp., 34 Forest St., Attleboro, Mass.—35, 45, 72
General Porcelain Co., 951 Pennsylvania Ave., Trenton, N.J.—15, 38
General Quartz Labs., Irvington-on-Hudson, New York—23
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. CE—Melville Eastham—2, 6, 13, 14, 17-19, 23, 27, 28, 30, 31, 35, 37-39, 46, 48, 51-53, 58, 59, 67, 70, 71, 73, 75, 77, 82
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General Research Co., 120 La Grange St., Morenci, Mich. CE—C. E. Cottrell—20, 24
General Scientific Corp., 4829 S. Kedzie Ave., Chicago 32, Ill.—27
General Screw & Mfg. Co., 1234 W. Monroe St., Chicago 7, Ill.—35
General Service Studios, Inc., 6625 Romaine St., Hollywood, Calif.—66
General Storage Battery Co., 2005 Locust St., St. Louis 3, Mo.—7
General Television and Radio Corp., 2701 N. Lehmann Court, Chicago 14, Ill.
General Time Instruments Corp., Thomaston, Conn.—75
General Transformer, 1250 W. Van Buren St., Chicago 7, Ill. CE—C. E. De Horn—17, 59, 77
General Tungsten Mfg. Co., 502 23rd St., Union City, N.J.—35, 45
General Winding Co., 420 W. 45th St., New York 19, N.Y.—18, 30
Gentlemen Products Div., Henney Motor Co., 1708 Cuming St., Omaha 2, Neb.—23
Geophysical Instrument Co., 1315 Half St. S.W., Washington 1, D.C.—24, 27
Geophysical Research Corp., Tulsa, Okla.—24
Geophysical Service, Inc., Dallas, Tex.—24
Geotechnical Corp., Lincoln, Mass.—24
The P. D. George Co., 5200 N. 2nd St., St. Louis 7, Mo.—83
M. A. Gerett Corp., 724 W. Winnebago St., Milwaukee 5, Wis.—65
Gering Products, Inc., N. 7th and Monroe Ave., Kenilworth, N.J.—38, 57
Glen H. Gerken's Electronic Labs., 11701 Bullis Rd., Lynwood, Calif.—24
G. M. Giannini & Co., Inc., 161 E. California St., Pasadena 5, Calif.—68, 70
Thomas B. Gibbs & Co., Div. of Borg Corp., 814 Michigan St., Delavan, Wis.—2, 23, 68
Gibbs & Hill Corp., 450 7th Ave., New York 1, N.Y.—20
Wm. Gibson Co., Div. of Associated Spring Corp., 1800 Clybourne Ave., Chicago 14, Ill.—35
Gibson Electric Co., 2361 Frankstown Ave., Pittsburgh 21, Pa.—35, 45
Gibson, Inc., 225 Parsons St., Kalamazoo 35, Mich. CE—Walter L. Fuller—2, 65
James A. Gilbert, 1771 Kenneth Way, Pasadena, Calif.—20
Gilbert Associates, Inc., 412 Washington St., Reading, Pa.—20
Gilfillan Bros., Inc., 1815 Venice Blvd.,

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IN ANY LABORATORY....

It is difficult to picture any modern scientific or industrial laboratory that does not have need for *some* G-R instrument. The considerable impetus given to electronic research during the war has greatly expanded the need for G-R equipment.

Since it was founded in 1915, General Radio has developed, manufactured and supplied industry with an increasingly large number of instruments for audio- and radio-frequency measurements, until at the present time the complete line of G-R equipment and accessories is numbered in the hundreds of models.

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Before you buy any electronic laboratory measuring equipment, it will pay you to investigate the G-R line.

GENERAL RADIO COMPANY Cambridge 39, Massachusetts

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Los Angeles 6, Calif. CE—Homer G. Tasker—1, 24, 62, 63

Glenn D. Gillett, National Press Bldg., Washington 4, D.C.—20

Girard-Hopkins, 1000 40th Ave., Oakland, Calif. CE—Charles Lasswell—13, 30

The Girdler Corp., Thermex Div., 2820 Broadway, Louisville 1, Ky. CE—W. H. Hickok—36

The Gisholt Machine Co., 13 S. Baldwin St., Madison 3, Wis.—27

Gits Molding Corp., 4600 W. Huron St., Chicago 44, Ill. CE—J. Gits, Jr.—51, 73

Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn 27, N.Y.—72

The Glasscraft Co., 5210 E. Olympic, Los Angeles 22, Calif. CE—Joe T. Voorhees—43

Glendale Optical Co., 250 Pennsylvania Ave., Brooklyn 7, N.Y.—35

Glendale Vacuum Products Co., 8816 77th Ave., Brooklyn 27, N.Y.—45

Glenn Roberts Co., 1009 Fruitvale Ave., Oakland, Calif.—13, 17, 18, 68, 77

Globe Phone Mfg. Corp., 2 Linden St., Reading, Mass.—2

Globe Wireless, Ltd., 405 Lexington Ave., New York 17, N.Y.—10, 63, 78

Ralph P. Glover, 1024 Superior St., Oak Park, Ill.—20

Glyco Products Co., Inc., 26 Court St., Brooklyn 2, N.Y. CE—Dr. G. J. Leuck—83

Goat Metal Stampings, Inc., 314 Dean St., Brooklyn 17, N.Y. CE—Jens Mortensen, C. A. Nimz—35

Godfrey Mfg. Corp., 2140 N. 27th St., Milwaukee 8, Wis.—2, 64

Paul Godley Company, 10 Marion Rd., P.O. Box J, Upper Montclair, N.J. CE—Paul F. Godley; Murray G. Crosby—3, 4, 10, 20

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Gold Shield Prods. Co., 350 Greenwich St., New York 13, N.Y.—17, 18

The James Goldmark Wire Co., 116 West St., New York 7, N.Y.—38, 84

Dr. Alfred N. Goldsmith, 597 Fifth Ave., New York 17, N.Y.—20

Goldsmith Bros. Smelting & Refining Co., 58 E. Washington St., Chicago 2, Ill. CE—M. M. Goldsmith—45, 72

F. J. Goldwater, 200 W. 20th St., New York 11, N.Y.—20

Good All Electric, 320 N. Spruce St., Ogalala, Neb.—25

B. F. Goodrich Co., 500 S. Main St., Akron 18, Ohio—35, 57

B. F. Goodrich Chemical Co., E. 9th St. and Prospect, Cleveland 15, Ohio—35, 57

Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, Ohio—51

Herman L. Gordon, 100 Normandy Dr., Silver Spring, Md.—20

Gorell & Gorell, Haworth, N.J.—27, 29, 34, 35, 50

Gothard Mfg Co., 1300 N. 9th St., Springfield, Ill.—56

The Gould-Moody Co., 395 Broadway, New York 13, N.Y. CE—S. S. Gould—65

Gould Storage Battery Corp., 35 Neoga St., Depew, N.Y.—7, 67

Grady Instrument Co., 689 Belmont St., Belmont 78, Mass. CE—Ed. Grady—25

Grafo Colloids Corp., Sharon, Pa.—45

The Gramer Co., 2736 N. Pulaski Rd., Chicago 39, Ill. CE—A. H. Burdick—17, 18, 78

L. F. Grammes & Sons, Inc., 399 Union St., Allentown, Pa CE—John D. Folwell—35

L. P. Graner, 40 E. 49th St., New York 17, N.Y.—20

Granite City Steel Co., Granite City, Ill.—22, 45

Graphite Metallizing Corp., 1057 Nepperhan Ave., Yonkers 3, N.Y. CE—H. B. Drake, Jr.—5, 35, 45

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Albert M. Grass, Forbes Hill Rd., Quincy, Mass.—20

Gray Instrument Co., 64½ W. Johnston St., Philadelphia 48, Pa.—75

Gray Mfg. Co., 230 Park Ave., New York 17, N.Y.—65

Gray Mfg. Co., 16-30 Arbor St., Hartford 1, Conn. CE—A. C. DeNapoli, Jr.—4, 24, 27, 62, 65

Gray Radio Co., 730 Okeshobee Rd., West Palm Beach, Fla. CE—F. E. Gray—63, 78

Graybar Electric Co., 420 Lexington Ave., New York 17, N.Y.—25

Grayhill, 9 N. Pulaski Rd., Chicago 24, Ill.—43, 73

W. Green Electric Co., Inc., 130 Cedar St., New York 6, N.Y. CE—L. W. Reinken—24, 59, 67

Greenhut Insulation Co., 31 W. 21st St., New York 10, N.Y.—38, 51

Greenlee Tool Co., 1903 Columbia Ave., Rockford, Ill.—43

Gregory Mfg. Co., 67 Franklin St., New Haven 11, Conn.—35, 68, 73

Grenby Mfg. Co., Plainville, Conn.—30, 70, 75

Grigsby-Allison Co., Inc., 407 N. Salem Ave., Arlington Heights, Ill.—73

Fred O. Grimwood, 712 National Metropolitan Bank Bldg., Washington 5, D.C.—20

Groves Corporation, 41 N. Sprigg St., Cape Girardeau 1, Mo.—70

Gruen Watch Co., Time Bldg., Cincinnati, Ohio—46

Guaranteed Products Corp., Wellington, Ohio—27

Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill. CE—Marvin Nelsen—18, 27, 44, 68, 73

Gudeman Co., 361 W. Superior St., Chicago 10, Ill. CE—Leo L. Grimm—13, 30

Guided Radio Corp., 161 Sixth Ave., New York 13, N.Y. CE—H. Dalrymple—2, 42, 77

Gulow Corp., 62 William St., New York 5, N.Y. CE—John A. Gulow—77, 82

W. & L. E. Gurley, 514 Fulton St., Troy, N.Y. CE—H. R. Larson—27

Edwin I. Guthman & Co., Inc., 15 S. Throop St., Chicago 7, Ill—CE Frank Iverson—4, 13, 14, 17, 18, 30, 35, 37, 43, 77, 84

H-B Electric Co., 6122 N. 21st St., Phila. 38, Pa.—68, 73

H-B Instrument Co., 2518 N. Broad St., Phila. 32, Pa. CE—Valentine Hiergesell—68

H.R.S, Prods., 5707 W. Lake St., Chicago 44, Ill.—13

H-W Mfg. Co., 3124 Larga Ave., Los Angeles 26, Calif.—75

Robt. M. Hadley Co., 707-11 E. 61st St., Los Angeles 1, Calif. CE—C. E. Leake—11, 16, 17, 35, 54, 61, 77

Andrew J. Haeff, Naval Res. Leb., Anacostia, D.C.—20

Haines Mfg. Co., 248 McKibben St., B'klyn 6, N.Y.—17, 36, 68

Harry Halinton, 612 N. Michigan Ave., Chicago 11, Ill.—25

Halldorson Co., 4500 Ravenswood Ave., Chicago 40, Ill. CE—P. J. Halldorson—2, 17, 18, 77, 82

Hallicrafters Co., 2611 S. Indiana Ave., Chicago 16, Ill. CE—R. E. Samuelson—1, 31, 42, 55, 63, 65, 78, 79

Arthur H. Halloran, 1020 Union St., San Francisco 11, Calif.—20

Halowax Prods. Div. Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N.Y.—83

Halstead Traffic Communications Corp., 155 E. 44th St., New York 17, N.Y.—24

Hamilton Beach Co., Racine, Wis.—50

Alex. Hamilton Institute, Inc., Dept. 333, 71 W. 23rd St., New York 10, N.Y.—74

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Hamilton Mfg. Co., Two Rivers, Wis.—26

Hamilton Radio Corp., 510 6th Ave., New York 11, N.Y. CE—Jack Ravdin—63

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y. CE—E. A. Leach—13-15, 17, 18, 37, 62, 63, 71-73, 78, 79

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Hammond Instrument Co., 2915 N. Western Ave., Chicago 18, Ill.—27

Hampton Roads B'casting Corp., Newport News, Va.—10

Handy & Harman, 82 Fulton St., New York 7, N.Y. CE—A. M. Setapen—45, 84

Hanovia Chemical & Mfg. Co., Chestnut & R.R. Ave., Newark, N.J.—45, 80

Wm. Hansen Co., 165 Silverbrook, Niles, Mich. CE—W. Hansen—27

Hansen Mfg. Co., Inc., Princeton 4, Ind.—50

Harco Tower, Inc., 1180 E. Broad St., Elizabeth 4, N.J. CE—E. Schaeffer—4, 5

Hardwick, Hindle, Inc., 40 Hermon St., Newark 5, N.J. CE—D. F. Hastings—17, 70

Chas. Hardy, Inc., 420 Lexington Ave., New York 17, N.Y.—25

Hargis Co., 706 W. 6th St., Bx. 1131, Austin, Tex.—25

Harper & Bros., 49 E. 33rd St., New York 16, N.Y.—9

H. M. Harper Co., 2620 Fletcher St., Chicago 18, Ill.—35

Harper Electric Furnace Corp., Niagara Falls, N.Y.—36

Harris Mfg. Co., 2422 W. 7th St., Los Angeles 5, Calif. CE—Fred Knowlden—65

Harris Prods. Co., 5106 Cowan Ave., Cleveland 4, Ohio—35

Harrison Radio Corp., 12 W. B'way,

(Continued on page 56A)

COLLINS

For Quality Leadership in

1 **AM and FM broadcast transmitters**

2 **Studio equipment and accessories**

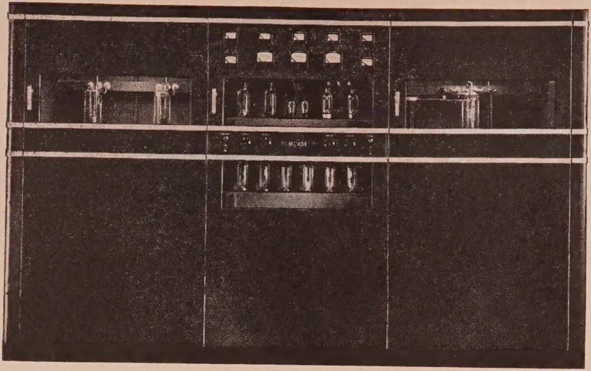
3 **AM and FM communication equipment**

4 **Automatic positioning mechanisms**

5 **Amateur radio equipment**

The equipment on the following pages is either ready for immediate delivery, in production, or is scheduled for production in the first half of 1946. Those preceded by an asterisk will be available for delivery during the latter period.

These Collins products have the advanced engineering, high quality, and superior performance that is typical of all Collins equipment.



The Collins 21A 5 kw. AM Air Cooled Broadcast Transmitter

Collins High Fidelity AM Broadcast Transmitters

1. 21A, 5000/1000 watts
***2.** 20T, 1000/500 watts
3. 300G, 250/100 watts

featuring efficiency, accessibility, high safety factors, and automatic power reduction.

... Look to Collins for Quality

AM and FM Studio Equipment and Accessories

1. 6P preamplifier

2. 6M program amplifier

3. 6X line amplifier and monitor

***4.** 12W studio console

5. 12Y portable remote amplifier, 1 channel, a.c.

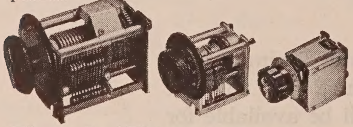
6. 12Z portable remote amplifier, 4 channel, a.c./d.c.

7. 26W limiting amplifier

***8.** equalizers, mixing panels, jack strips, attenuators

COLLINS 12Z REMOTE AMPLIFIER

Singleturn or multiturn Autotune heads are available in a torque range of 4-25 inch pounds.



The Collins Autotune

The Collins Autotune is an electrically controlled means of mechanically repositioning adjustable rotary elements. Any combination of such components can be returned to any one of a number of preselected positions. By means of the Collins Autotune system, radio transmitters and receivers can be completely retuned in a matter of seconds. The Autotune system is readily adaptable to a variety of industrial control requirements.

Frequency Modulation

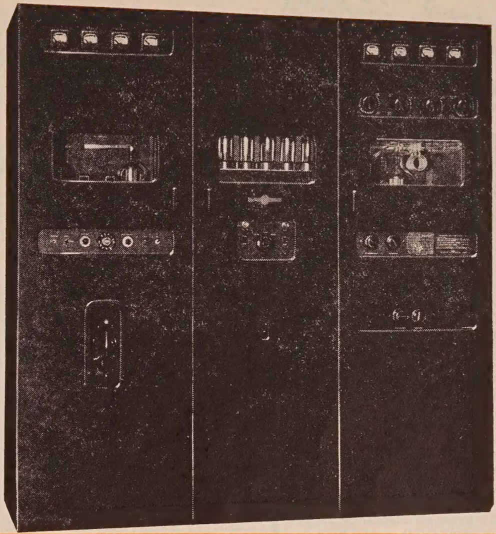
Broadcast Transmitters

***1.** 735A-1, 50,000 watts
***2.** 734A-1, 10,000 watts
***3.** 733A-1, 3,000 watts
***4.** 732A-1, 1,000 watts
***5.** 731A-1, 250 watts

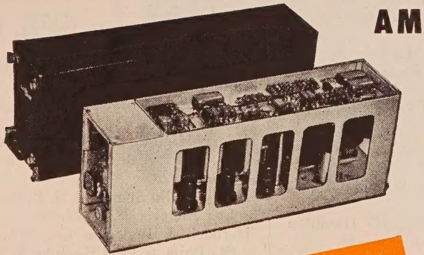
Communication Equipment

***1.** 25 watt to 250 watt mobile and fixed transmitters in a frequency range of 25-162 mc.
***2.** Associated control equipment
***3.** Receivers for specific applications

The Collins 231D AM Autotune Communication Transmitter



Leadership in Radio Communications



The Collins 51K-1 Communication Receiver

AM Communication Equipment

1. 231D, 10 channel, 3-5 kw., 2-18.1 mc., Autotune Transmitter, crystal or sealed M.O. control
2. 16F, 10 channel, 300-500 watts, 2-20 mc., Autotune Transmitter, crystal or sealed M.O. control
3. 32RA, 4 channel, 50-75 watts, 1.5-15 mc., bandswitching transmitter
4. 51K-1, 10 channel, 2.4-18.3 mc., crystal controlled, Autotune aircraft receiver

*5. 51H-2, 20-30,000 kc., communication receiver

AMATEUR RADIO

In prewar years, Collins came to be known as headquarters for highest quality amateur equipment. Continuing that tradition, our new contributions to ham radio will have the added experience and knowledge gained by supplying radio equipment for wartime usage. Look to Collins for a versatile transmitter that is complete in every respect, and for a receiver of higher performance under the exacting conditions of ham radio.

TOMORROW SPEAKS!

The Collins Research Division, directed by eminent scientists who contributed to the development of many exacting radar applications, is conducting a continuing program in the field of advanced research. The benefits of this program may be expected to result in entirely new products of far-reaching effect in scientific applications. These benefits will also be reflected in the ever-advancing design of Collins radio equipment.

**Scheduled for first half of 1946.*

Collins Radio Company, Cedar Rapids, Iowa;
11 West 42nd Street, New York 18, N. Y.

IN RADIO COMMUNICATIONS, IT'S COLLINS

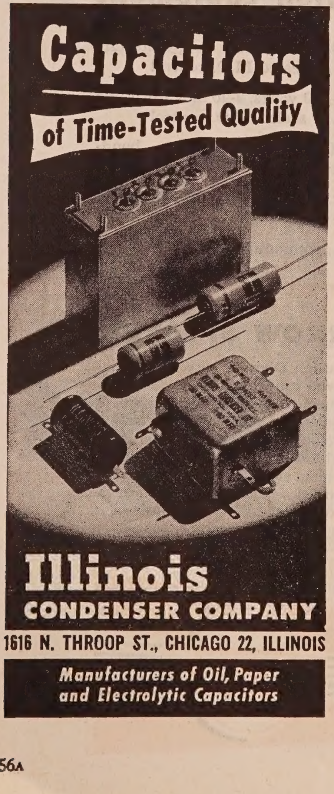
NEW Hickok

Radio Service Instruments

If It Isn't A Hickok Indicating Michromhos It's Not Dynamic Mutual Conductance

These new 1946 HICKOK radio tube and set testers make still closer tests, with finer accuracy, rejecting tubes that might get by with an ordinary tester. 7 selector switches instead of 2, aims to prevent obsolescence. These are the instruments that are held in highest esteem. Order from your jobber.

The Hickok Electrical Instrument Co.
10587 Dupont Ave., Cleveland 8, Ohio



Capacitors of Time-Tested Quality

Illinois
CONDENSER COMPANY
1616 N. THROOP ST., CHICAGO 22, ILLINOIS

Manufacturers of Oil, Paper and Electrolytic Capacitors

(Continued from page 52A)

New York 7, N.Y. CE—W. E. Harrison—25
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio CE—W. W. Lawson—23
Frederick Hart & Co., Inc., 350 Madison Ave., New York 17, N.Y. CE—T. C. Smith—65
See our advertisement page 168-A
Hart Mfg. Co., 110 Batholomew Ave., Hartford 6, Conn. CE—J. H. Blaisdell—56, 68, 73
Hart Moisture Gauges, Inc., 126 Liberty St., New York 6, N.Y.—75
Hartenstine-Zane Co., Inc., 225 B'way, New York 7, N.Y. CE—Chas. J. Hartenstine—5
Hartfield Electric Mfg. Co., Mansfield, Ohio—73
Hartford City Paper Co., Hartford City, Ind.—38
Hartford Empire Co., 333 Homestead Ave., Hartford 5, Conn.—43
Hartford Faience Co., 271 Hamilton St., Hartford, Conn.—15, 38
Hartford Machine Screw Co., 476 Capitol Ave., Hartford 2, Conn.—35
Harvey Machine Co., 6200 Avalon Blvd., Los Angeles 5, Calif. CE—W. C. Abansslernan—63, 78
Harvey Radio Co., 103 W. 43rd St., New York 18, N.Y.—25
See our advertisement page 133-A
Harvey Radio Labs. Inc., 447 Concord Ave., Cambridge 38, Mass. CE—B. J. Casman—23, 32, 59, 63, 78
Harvey-Wells Electronics, Inc., 143 North St., Southbridge, Mass.—2, 23, 63, 78
Harwood Co., 540 N. LaBrea St., Los Angeles 36, Calif. CE—A. C. Pearson—19
R. G. Haskins Co., 615 S. California St., Chicago 12, Ill.—35
Hasler-Tel Co., 30 Vesey St., New York 7, N.Y.—75
John Hassal, Inc., Clay & Oakland Sts., B'klyn 22, N.Y.—35
Hastings Instrument Co., 117 Hampton Roads Ave., Hampton, Va.—24
Hastings Sales Engineering Corp., 530 Commonwealth Ave., Boston 15, Mass. —25
(See General Communications.)
See our advertisement page 134-A
Hatcher & Fish, 125 Kansas Ave., Topeka, Kan.—1, 23
Hatfield Wire & Cable Co., 605 Hillside Ave., Hillside, N.J.—84
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo. CE—C. M. Hathaway—20, 24, 27, 46, 52, 53, 59, 75
Hatheway Mfg. Co., Bridgeport, Conn. —19, 35
Hatry & Young, 203 Ann St., Hartford, Conn.—25
Arthur T. Hatton & Co., 410 Asylum St., Hartford 3, Conn.—20
Havey Corp., East Newark, Del.—57
Havens & Martin, Inc., Box 5229, 3301 W. Broad St., Richmond 20, Va.—10
Hawley Prods. Co., 333-339 N. 6th St., St. Charles, Ill. CE—Vaughn E. Morrison—11, 51
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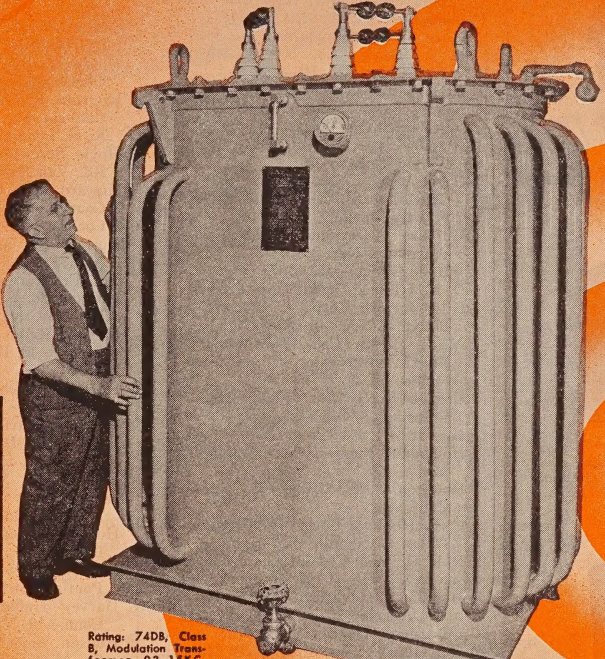
Haydon Mfg. Co., Inc., Forestville, Conn.—50, 68, 73
Haydu Bros., Mt. Bethel Rd. (Warrenville), Plainfield, N.J. CE—Zoltan Haydu—43, 79
C. W. Haynes Labs., Inc., 61 Chandler St., Springfield, Mass.—41, 83
Haynes Stellite Co., Kokomo, Ind.—45
Hays Corp., Michigan City, Ind.—27
A. V. Hazeltine, Stevens Institute of Tech., Hoboken, N.J.—20
Hazeltine Electronics Corp., 58-25 Little Neck Pkwy., Little Neck, N.Y. CE—Daniel E. Hartnett—24, 63, 78
Hearing Aid Labs., 1404 Franklin St., Michigan City, Ind.—2
Hearst Radio, Inc., 28 W. 44th St., New York 18, N.Y.—10
Heath Co., 305 Territorial, Benton Harbor, Mich. CE—Bjorn Heyning—1
Hegeler Zinc Co., Danville, Ill.—35
Heiland Res. Corp., 130 E. 5th Ave., Denver 9, Colo.—24, 27
Heinemann Circuit Breakers Co., Box 299 Trenton 2, N.J. CE—N. J. Schwartz—68, 73
Heintz & Kaufman, Ltd., Tanforan Ave., S. San Francisco, Calif. CE—Geo. Lebedeff—80
Heinze Electric Corp., Lowell, Mass.—8, 50, 58
Herman E. Held, 420 Market St., San Francisco 11, Calif.—25
Helipot Corp., 1011 Mission St., South Pasadena, Calif.—70
W. C. Heller & Co., Montpelier, Ohio—11
Hellige, Inc., 3718 Northern Blvd., L.I.C., N.Y.—75
Helwig Co., 2548 N. 13th St., Milwaukee, Wis.—45
Henrite Prods. Corp., Ironton, Ohio—45
Paul Henry Co. Thermal Div., 2037 S. LaCienega Blvd., Los Angeles 54, Calif.—27
Henry Mfg. Co., 2213 Westwood Blvd., W. Los Angeles 25, Calif. CE—W. C. Elleby—23
Henry Radio Shop, 814 N. LaBrea Ave., Los Angeles 38, Calif.—25
Herbach & Rademan Co., 522 Market St., Phila. 6, Pa. CE—John E. Wagenseller—1, 2, 10, 24, 25, 27, 31, 46, 48, 52, 53, 63, 69, 75, 78, 80
Hercules Electric & Mfg. Co., Inc., 2500 Atlantic Ave., B'klyn 7, N.Y. CE—A. Folowitz—17, 77
Hercules Powder Co., 916 Market St., Wilmington 28, Del.—57
Heresite & Chemical Co., Manitowoc, Wis.—51
Hermaseal Co., 314 S. Riverside Dr., Elkhart, Ind. CE—Carl H. Warsau—38
Heroservice, 45 W. 45th St., New York 19, N.Y. CE—Herbert Rosen—25, 66, 76
Herron Optical Co., 705 W. Jefferson Blvd., Los Angeles 7, Calif.—43, 51A
Hertner Electric Co., 12690 Elmwood Ave., Cleveland 11, Ohio—21, 49
Robt. J. Herzog, 11 W. 42nd St., New York 18, N.Y.—20
Robt. Hetherington & Son, Inc., 1216 Elmwood Ave., Sharon Hill, Pa. CE—J. H. Schellman—73

(Continued on page 58A)

POWER FOR THE BIG STATIONS

by AmerTran since 1901



Rating: 74DB, Class B, Modulation Transformer .03-15KC; 12 KV D.C. Operating 51 K.V. Hi-potential.

SPECIFY AMERTRAN Components in your NEW TRANSMITTER

Modulation Transformers and Reactors
Oil or Abestol Immersed Plate Transformers
W Type Transmitter Transformers
Transtat A. C. Voltage Regulators (Manual, Motor and Automatic Operation)
Radio components
Wave filters
Rectifiers
Transformers for Electronic Applications
Air borne Transformers
General Purpose Lighting and Power Transformers

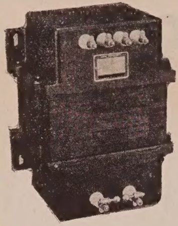
From Marconi's primitive Trans-Atlantic spark set in 1901 to Bakersfield's powerful O.W.I. station in 1944, the strongest signals emanate from AmerTran Transformers. AmerTran's complete line of magnetic components for transmitters includes modulation and rectifier sets as well as individual units of the oil and abestol immersed or dry type. What are your requirements?

AMERTRAN

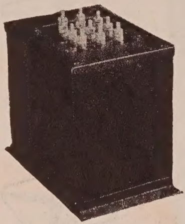
REG. U. S. PAT. OFF.
MANUFACTURING SINCE 1901 AT NEWARK N. J.

AMERICAN TRANSFORMER COMPANY
178 EMMET STREET, NEWARK 5, N. J.

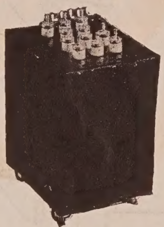
Pioneer Manufacturers of Transformers, Reactors and Rectifiers for Electronics and Power Transmission



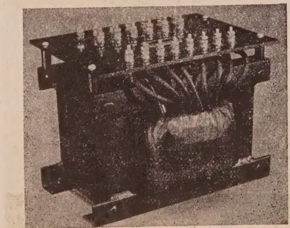
If you buy; I. E.
you buy the best.



Manufacturers of magnet wire, coils, transformers, rectifiers and electronic equipment.



Agents in the principal cities.



INDUCTIVE EQUIPMENT
CORPORATION
"Quarry Park"
Gettysburg, Pa.

(Continued from page 56A)

Hevi-Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 8, Wis.—36
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif. CE—Brunton Bauer—6, 31, 35, 46, 52, 75
Hexacon Electric Co., 161 W. Clay Ave., Roselle Park, N.J. CE—A. L. Johnson—43
Heyer Industries, Inc., 41 Cortland St., Belleville 9, N.J.—59, 63, 77-79
Heyman Mfg. Co., Kenilworth, N.J.—19
Hickok Elec. Inst. Co., 10587 Dupont Ave., Cleveland 8, Ohio CE—Walter White—1, 31, 46, 52, 53, 62, 75
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R. J. Higgins Co., 600 S. Michigan Ave., Chicago 5, Ill.—25
Higgins Industries, Inc., 2221 Warwick Ave., Santa Monica, Calif. DE—F. Berberich, Sr.—23, 63, 78
Higgins Ink Co., Inc., 271 9th St., B'klyn 15, N.Y.—26
Highpower Crystal Co., 2035 W. Charleston St., Chicago 47, Ill. CE—F. Lazarek—23
Hillburn Electronic Prods. Co., 1 Worth St., New York 13, N.Y. CE—B. S. Gilman—17, 42, 77
D. M. Hilliard, Jenkintown, Pa.—20
Hilo Varnish Corp., 42 Stewart Ave., B'klyn 6, N.Y.—41, 83
A. J. Hintze Co., 1547 Westchester Blvd., Westchester, Ill. CE—A. J. Hintze—25
Gustav Hirsch Org., 310 W. Broad St., Columbus 8, Ohio—25
Hobart Mfg. Co., Troy, Ohio—49, 69
Hodgman Rubber Co., Framingham, Mass.—57
Hodgson & Assoc., Box 406, Inglewood, Calif.—20
C. L. Hoffman Corp., 436 Blvd. of the Allies, Pittsburgh 19, Pa.—2
P. R. Hoffman Co., 321 Cherry St., Carlisle, Pa. CE—P. R. Hoffman—23
Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif. CE—Walter S. Harman—1-4, 24, 25, 63, 69, 78
Hofstatter's Sons, Inc., 42-53 24th St., L.I.C., N.Y.—11
John V. L. Hogan, 730 5th Ave., New York 19, N.Y.—20
Hoke Vertical Radiator Co., 135 S. Market St., Petersburg, Va.—4, 5
Hollister Crystal Co., 1617 Pearl St., Boulder, Colo. CE—Ted Hirthecker—23
Holliston Mills, Inc., Norwood, Mass.—26, 38
Hollywood Electronics Co., 800 Sunset Blvd., Los Angeles 12, Calif.—25
Hollywood Transformer Co., 645 N. Martel Ave., Los Angeles 36, Calif.
Holo-Krome Screw Corp., Hartford 10, CE—E. O. Woodward—30, 77 Conn.—35
Holtzer-Cabot Electric Co., 125 Amory St., Boston 19, Mass. CE—N. F. Noard—21, 49
Holyoke Wire & Cable Corp., 730 Main St., Holyoke, Mass.—84
Home Recording Co., 699 E. 135th St., New York 35, N.Y.—65
Homelite Corp., Port Chester, N.Y.—49, 59
O. Hommel Co., Glendale, Pittsburgh, Pa.—45
J. Hope, Box 666, Wenonah, N.J.—38
Hope Webbing Co., Providence, R.I.—38, 57
Hopp Press, Inc., 460 W. 34th St., New York 1, N.Y.—35
L. C. F. Horle, 90 West St., New York 6, N.Y.—20
A. C. Horn Co., 43-42 10th St., Long Island City, N.Y.—41, 83
Horni Signal Mfg. Corp., 421 W. 54th St., New York 19, N.Y. CE—Jean F. Verdi—13, 67, 77
Louis P. Horning, Jr., Labs., Box 200, Elizabeth 3, N.J. CE—L. P. Horning, Jr.—24
Hoskins Mfg. Co., 4445 Lawton St., Detroit 8, Mich. CE—Gatward—45, 84
House of Plastics, 1720 Euclid Ave., Cleveland 15, Ohio—51
Houston Radio Supply Co., Inc., 910 Calhoun St., Houston 2, Tex. CE—R. H. Lenert, Jr.—25
Hovis Screwlock Co., 8096 E. 9 Mile Rd., Van Dyke, Mich.—43
Howard Mfg. Corp. 1401 S. Main St., Council Bluffs, Iowa CE—Richard Cochran—23
Howard Pacific Corp., 932 N. Western Ave., Los Angeles 27, Calif. CE—W. F. Frankart—77
Howard Plastics, Inc., 2600 Grand Ave., Kansas City, Mo.—27
Howard Radio Co., 1731 Belmont Ave., Chicago 13, Ill. CE—Wilfred James—63-65
Howe & French, Inc., 99 Broad St., Boston 10, Mass.—41, 83
Howell Electric Motors Co., 409-15 N. Roosevelt, Howell, Mich.—49, 50
F. S. Howes, Engineering Bldg., McGill University, Montreal, Que., Can.—20
Jack Howlett Co., 131 1st Ave. W., 307 Bayview Bldg., Seattle 99, Wash.—25
Hoyt Electrical Instrument Wks., 857 Boylston St., Boston 16, Mass.—46, 75
M. D. Hubbard Spring Co., Central Ave., Pontiac, Mich.—35
Harvey Hubbell, Inc., Bridgeport 2, Conn.—19, 73
Hudson American Corp., 25 W. 43rd St., New York 18, N.Y. CE—A. Hass—63, 78
Hudson Bros. Mfg. Co., Inc., 539 42nd St., Union City, N.J. CE—J. Hudson—70
Hudson Wire Co., Winsted, Conn.—84
Hughes Aircraft Co., Glendale, Calif.—24
August Hund, 718 Adelaide Pl., Santa Monica, Calif.—20
Hungerford Plastics Corp., Murray Hill, N.J.—51, 57
Hunt Corp., 133 N. Hanover St., Carlisle, Pa. CE—S. Ryesky—23
Hunter Electro Copyist, Inc., 430 S. Warren St., Syracuse, N.Y.—26
Hunter Pressed Steel Co., Lansdale, Pa.—35
Huntington Precision Prods., 1444 Washington Ave., Huntington 17, W.Va. CE—C. C. Cole—35
Huse Liberty Mica Co., 171 Camden St., Boston 18, Mass.—15, 38
Hy Ef Electrical Prods. Mfg. Co., 1515 W. Pico Blvd., Los Angeles 15, Calif.—13
Hydraulic Press Mfg. Co., Mount Gilead, Ohio—43

(Continued on page 60A)

from MIDGETS *to* GIANTS

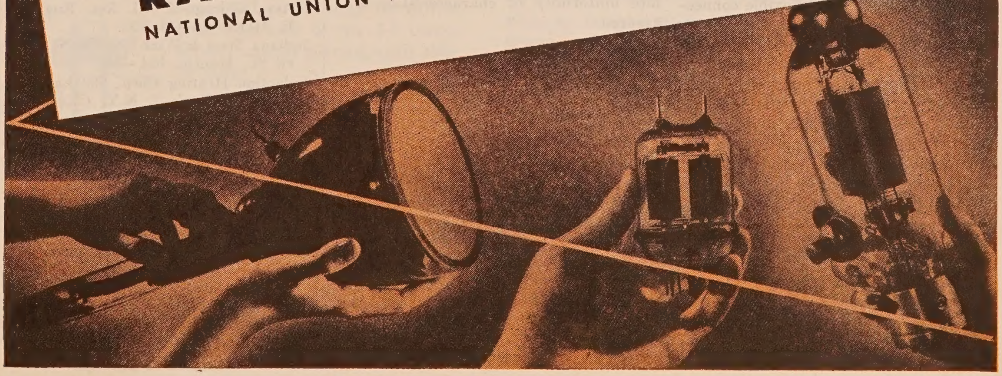
AS A TOP producer of radio and electron tubes, National Union makes hundreds of types—from thumbnail miniatures to giant cathode-ray, transmitting and power tubes.

From National Union Research Laboratories have come an impressive number of entirely new types of tubes with special characteristics to meet new requirements, particularly in the ultra-high frequency regions. N. U. scientists have developed new materials . . . for example, new cathode coatings for high emission efficiency. They have devised new precision manufacturing methods to produce quality tubes in quantity—fast! They have created new standards for tube performance and useful life under rigorous operating conditions.

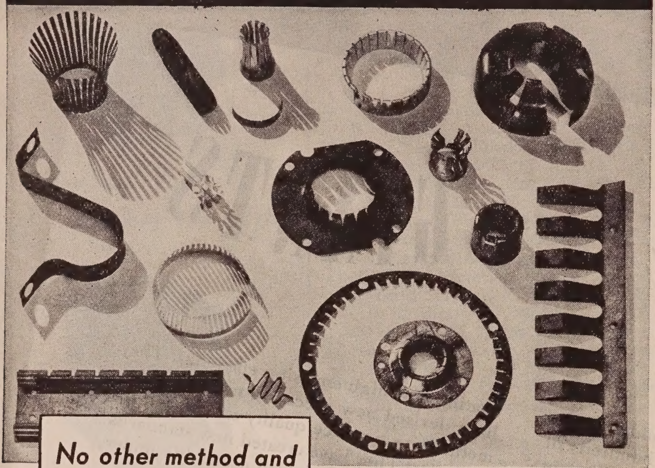
For special purpose electron tubes designed to serve a wide variety of applications, new and old—tubes which meet the highest standards of efficiency and long life—call on National Union.

NATIONAL UNION
RADIO AND ELECTRON TUBES

NATIONAL UNION RADIO CORPORATION • NEWARK 2, N. J.



New Ceilings of Performance
with
Micro-Processed Beryllium Copper

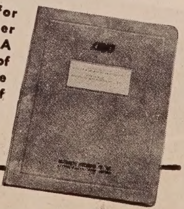


No other method and no other material can produce these Radar contacts to tolerances required.

Instrument Specialties Company produces coil springs, flat springs and precision stampings by micro-processing beryllium copper. Radar contacts as shown are typical examples of the predictable results of micro-processing. What cannot be shown are the close tolerances and physical properties which have been incorporated in each finished part. These tube and sliding contacts, gaskets, and flexible connectors were designed by I-S with knowledge of the full capabilities of micro-processed beryllium copper, and show how micro-processing opens the door to take advantage of all "available beryllium" in beryllium copper. By material control, selection of proper time and temperature in heat treatment and heat-treat forming, plus experience in specialized tooling, I-S is able to give new values to your reasonable expectations of performance.

Feel free to make use of micro-processing, which often begins as discussion with I-S engineers concerning desired, yet seemingly unattainable performance. We obtain closer tolerances, higher tensile strength, consistent uniformity, higher electrical properties, corrosion resistance, and minimum drift, with step-by-step precision control. Micro-processing is an exclusive process which offers opportunities for great savings—assembly and maintenance cost is lowered, higher operating efficiency is obtained and absolute uniformity of characteristics is assured.

"Design Data for Beryllium Copper Radar Contacts." A limited number of copies are available to designers of radar equipment.



INSTRUMENT SPECIALTIES CO., INC.
270 BERGEN BOULEVARD, LITTLE FALLS, N. J.
FIELD ENGINEERING OFFICES: BOSTON · CHICAGO · NEW YORK

(Continued from page 58A)

Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, Mass. CE—Chas. F. Stromeyer—80

ITE Circuit Breaker Co., 19 & Hamilton, Phila. 30, Pa.—73
Ideal Clamp Mfg. Co., 202 Bradford St., B'klyn 7, N.Y.—35
Ideal Commutator Dresser Co., 1631 Park Ave., Sycamore, Ill.—19, 43, 82
Ideal Electric & Mfg. Co., Mansfield, Ohio—49
Ilg Electric Ventilating Co., 2882 N. Crawford Ave., Chicago 41, Ill.—9
Ill. Bell Telephone Co. Radio Corp., Chicago, Ill.—10
Illinois Cabinet Co., Rockford, Ill.—11, 16, 61
Illinois Condenser Co., 1160 N. Howe St., Chicago 10, Ill. CE—Jerome J. Kurland—13
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Illinois Electric Porcelain Co., Macomb, Ill.—15, 38
Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.—27
Illinois Tool Wks., 2501 N. Keeler Ave., Chicago 39, Ill.—36
Illinois Wood Prods. Corp., 2512 S. Damen Ave., Chicago 8, Ill.—11
Illinois Zinc Co., 2959 W. 47th St., Chicago 32, Ill.—45
Illustrated Technical Prods. Corp., 2 Lafayette St., New York 7, N.Y.—9
Ilsco Copper Tube & Prod., Inc., Mariemont Ave., Mariemont 3, Ohio—12
Imperial Electric Co., 84 Ira Ave., Akron 1, Ohio—21, 49
Imperial Molded Prods. Corp., 2925 W. Harrison St., Chicago 12, Ill.—51
Imperial Porcelain Wks., Inc., New York Ave. & Mulberry St., Trenton 8, N.J.—15, 38
Independent B'casting Co. (KGBX), Springfield, Mo.—10
Independent Contact Mfg. Co., 540 39th St., Union City, N.J.—35
Independent Merchants B'casting Co., Minneapolis, Minn.—10
Independent Pneumatic Tool Co., State & Claim, Aurora, Ill.—43
Indian Radio & Cable Communications Co., Bombay, India—10
Indiana B'casting Corp., Indianapolis, Ind.—10
Indiana Steel Prods. Co., 6 N. Michigan Ave., Chicago 2, Ill. Res. Eng.—W. E. McKibben—44
Indiana Steel & Wire Co., 700 S. Council St., Muncie, Ind.—84
Induction Heating Corp., 389 Lafayette St., New York 3, N.Y. CE—W. C. Rudd—36
Inductive Equip. Corp., Quarry Park, Gettysburg, Pa. CE—J. R. Gaston—17, 18, 30, 36, 44, 67, 77, 82
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Industrial Chemical Labs., Box 141, S. Orange, N.J.—20, 24
Industrial & Comm. Electronics, Belmont, Calif. CE—D. G. Clifford—68, 80
Industrial Condenser Corp., 3243-65 N. Calif. Ave., Chicago 18, Ill. CE—H. L. Sklar—13

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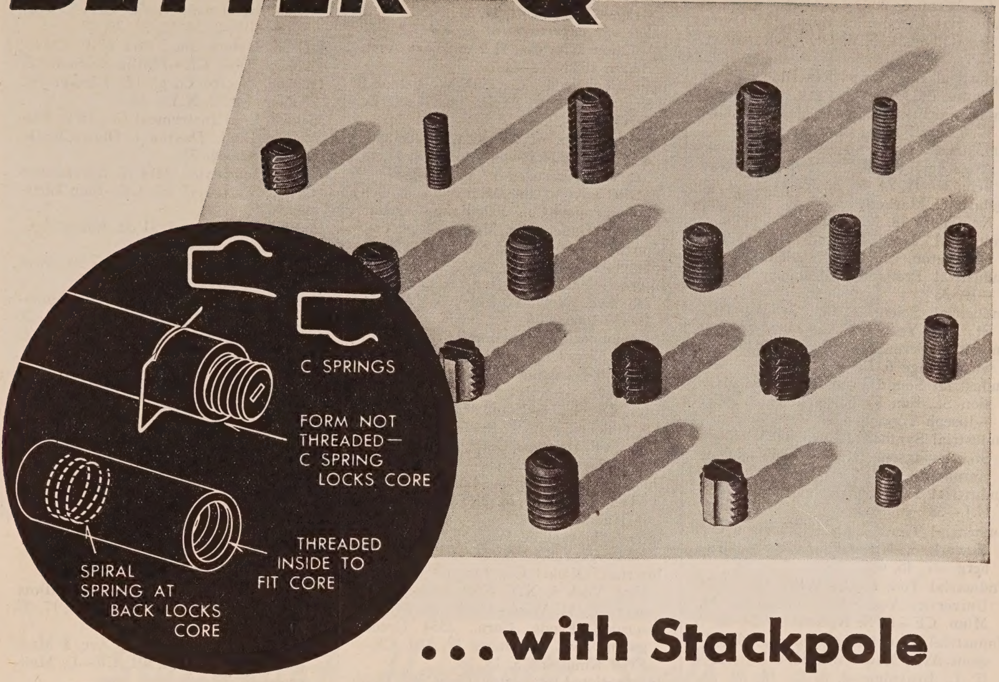
BETTER "Q"

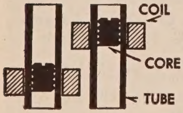

C SPRINGS
FORM NOT THREADED— C SPRING LOCKS CORE
THREADED INSIDE TO FIT CORE
SPIRAL SPRING AT BACK LOCKS CORE

. . . with Stackpole Screw-type Molded Iron Cores

HIGHER "Q"—Since there is no brass core screw in field of coil and the core is not grounded.

SMALLER ASSEMBLIES—Overall length of coil and screw type core is less than that of conventional core, machine screw and bushing, thus permitting smaller coil assemblies and smaller cans.

FACILITATE DESIGN OF I-F TRANSFORMERS AND DUAL I-F transformers for AM and FM since all cores may be tuned from one end of the I-F transformer can by placing coils side by side.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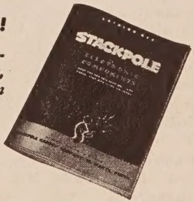
CORE
TUBE

Antenna, R-F and Oscillator coils for each band of a multi-band set become small and compact and may be mounted in groups for each band.

HIGHLY ECONOMICAL—Threaded coil forms unnecessary. See accompanying sketch for suggested use of wire clip in form slot. If desired, the tube can be threaded to fit core as illustrated.

Electronic Components Catalog!

Write for Stackpole Electronic Components Catalog RC6 covering switches, fixed and variable resistors and iron cores.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ELECTRONIC COMPONENTS

Samples and Engineering Data gladly sent on request

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"EVERYTHING IN CARBON BUT DIAMONDS"

(Continued from page 60A)

Industrial Dev. Eng. Assoc., 5874 College Ave., Indianapolis 5, Ind. CE—Joe Weaver—20
Industrial Electronics Corp., 505 Court St., B'klyn 31, N.Y. CE—J. Rapapart—77
Industrial Eng. Corp., Rea Bldg., Terre Haute, Ind.—27
Industrial Filter & Pump Mfg. Co., 3017 W. Carroll Ave., Chicago 12, Ill.—43
Industrial Instruments, Inc., 17 Pollock Ave., Jersey City 5, N.J. CE—Nat Schnoll—11, 24, 46, 70, 75
Industrial Marketing, 330 W. 42nd St., New York 18, N.Y.—9
Industrial Molded Prods. Co., 2035 Charleston, Chicago 47, Ill.—51
Industrial Prods. Co., Danbury, Conn.—19, 35
Industrial Scientific Co., 34 W. 33rd St., New York 1, N.Y.—20, 24
Industrial Screw & Supply Co., 711 Lake St., Chicago 6, Ill.—35
Industrial Sound Prods. Co., 3597 Mission St., San Francisco 10, Calif. CE—Joseph Topping—25
Industrial Synthetics Corp., 60 Woolsey St., Irvington 11, N.J. CE—A. A. Kaufman—12, 51
Industrial Tape Corp., New Brunswick, N.J.—38
Industrial Timer Corp., 115 Edison Pl., Newark 5, N.J. CE—L. L. Neidenberg—27, 46, 68
Industrial Tool & Die Wks., Inc., 2824 University Ave. S.E., Minneapolis 14, Minn. CE—P. S. Nissensan—24, 63
Industrial Transformer Corp., 2540 Belmont Ave., New York 58, N.Y. CE—E. L. Bruyning—2, 6, 17, 18, 30, 31, 37, 46, 52, 53, 75, 77, 82
Industrial Wire Cloth Prods. Corp., Wayne, Mich.—42
Industrial X-Ray Labs. Inc., 115 Belmont Ave. N., Seattle, Wash.—24
Ingersoll Steel & Disc Co., New Castle, Ind.—45
Ingraham Co., Bristol, Conn.—11
Insel Co., Schuyler Ave., Fort Quincy, Arlington, N.J.—51
Insl-X Co., Inc., 855 Meeker Ave., B'klyn 22, N.Y.—41, 83
Instructograph Co., 4701 Sheridan Rd., Chicago 40, Ill.—74
Instrument Electronics, 253-21 Northern Blvd., Little Neck, L.I.—46
Instrument Optics Co., 1872 Genesee St., Buffalo 11, N.Y. CE—Lawrence J. Davenport—43, 51A
Instrument Resistors, Inc., 25 Amity St., Little Falls, N.J. CE—A. H. Melick—70
Instrument Specialties Co., 270 Bergen Blvd., Little Falls, N.J. CE—F. S. Stickney—35
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Instruments Publ. Co., Inc., 1117 Wolfendale St., Pittsburgh 12, Pa.—9
Insulatine Co., 1 B'way, New York 4, N.Y.—41, 83
Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N.Y.—51
Insulating Fabricators of N.E., Inc., 69 Grove St., Watertown 72, Mass.—51, 54, 57
Insulating Tube Co., Inc., 26 Cottage St., Box 1, Poughkeepsie, N.Y.—38, 51
Insulation Mftrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill. CE—A. S. Gray—37, 38, 40, 41, 57, 83
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Insulation Mfg. Co., 11 New York Ave., B'klyn 16, N.Y.—51
Insulation Prods. Co., 504 N. Richland St., Pittsburgh 8, Pa. CE—W. D. Stevenson—51
Insuline Corp. of America, 36-02 35th Ave., L.I.C., N.Y.—14, 35, 39, 58, 71, 73
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Insulite Div. of the Minnesota & Ontario Paper Co., 500 Baker Arcade Bldg., Minneapolis, Minn.—38
Intercall Systems Inc., 610 Linden Ave., Dayton 3, Ohio—2
Intercollegiate B'casting System, 507 5th Ave., New York 17, N.Y. CE—David Borst—10
Intermountain B'casting Corp., Salt Lake City, Utah—10
Internat'l B'casting Co., Reynosa, Mexico—10
Inter. Derrick & Equip. Co., Columbus 8, Ohio CE—L. E. Roelofs—4, 5
Internat'l Detrola Corp., 1501 Beard Ave., Detroit 9, Mich.—11, 63
Internat'l Electronics Labs., 630 5th Ave., New York 20, N.Y. CE—Alfred P. Huchberger—20
Internat'l Machine Wks., 2207 46th St., N. Bergen, N.J.—60
Internat'l Nickel Co., Inc., 67 Wall St., New York 5, N.Y. Electronics Engineer—E. M. Wise—15, 38, 45, 84
Internat'l Prods. Corp., 2554 Greenmount Ave., Baltimore 18, Md. CE—Fred Knudsen—5, 15, 38
International Projector Corp., 92 Gold St., New York 7, N.Y.—2
Internat'l Res. Labs., 32 Cedar St., Dobbs Ferry, N.Y.—24
Internat'l Resistance Co., 401 N. Broad St., Phila. 8, Pa. CE—Jesse Marsten—70
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International Screw Co., Hartford, Conn.—35
Internat'l Transformer Co., 396 B'way, New York 13, N.Y.—17, 77
Interstate B'casting Co., WQXR, 730 5th Ave., New York 19, N.Y.—10
Intra-Therm Corp., 221 Keosauqua Way, Des Moines 9, Iowa CE—Loran B. Himmel—20, 24, 36, 52
Invincible Tool Co., 611 Empire, Pittsburgh 22, Pa.—35, 43
Iowa B'casting Co., Des Moines, Iowa—10
Irvington Varnish & Insulator Co., 6 Argyle Ter., Irvington 11, N.J. CE—E. Glass—38, 41, 83
Isle of Dreams B'casting Co., Davenport, Iowa—10
Islip Radio Mfg. Co., Foot of Beach St., Islip, L.I., N.Y.—1, 24, 27, 63, 78
Isolantite Inc., 343 Cortland St., Belleville 9, N.J. CE—R. L. Hiester—4, 12, 15, 38

JBL Instrument Co., Sycamore & Mill Rd., Clifton Hts., Pa. CE—R. D. Leonard—73
JBT Instruments, Inc., 441 Chapel St., New Haven 8, Conn.—73, 75
JFD Mfg. Co., 4111 Ft. Hamilton Pkwy., B'klyn 19, N.Y. CE—A. Finkel—5, 12, 35, 73, 84
J. Ray Specialties Mfg. Co., 764 S. Olympia, Tulsa, Okla. CE—J. Ray Stamphill—2, 24, 52, 53, 75, 77
Jack & Heintz, Inc., Box 6719, Cleveland 1, Ohio CE—Phillip Scofield—27
Jackson Electro Corp., 124 Bleeker St., New York 12, N.Y.—43
Jackson Elec. Instrument Co., 18 S. Patterson Blvd., Dayton 1, Ohio CE—R. C. Apple—46, 75
Jackson Industries, 2414 N. Sacramento Ave., Chicago 47, Ill. CE—Sam Lirtzman—11
Jackson & Moreland, 31 St. James Ave., Boston 16, Mass.—20
Chas. F. Jacobs, 270 Lafayette St., New York 12, N.Y.—4, 5
Henry Duvall James, 602 Commonwealth Annex, Pittsburgh 22, Pa.—20
James Vibrapower Co., 1551 Thomas St., Chicago 35, Ill.—59, 81
Jamestown B'casting Co., Jamestown, N.D.—10
Janette Mfg. Co., 556 W. Monroe St., Chicago 6, Ill. CE—J. Kotchevar—21, 49
Jansky & Bailey, 1226 Wisconsin Ave. N.W., Washington 7, D.C.—20
Jarrell-Ash Co., 165 Newbury St., Boston 16, Mass. CE—H. C. Ransom—24, 51A
Kenneth W. Jarvis, 1045 Pine St., Winnetka, Ill.—20
Jeffers Electronics, Hoover St., DuBois, Pa. CE—Raymond Fulmer—13, 17, 37, 70
Jefferson Electric Co., 25th Ave. & Madison St., Bellwood, Ill. CE—L. Mauerer—17, 77
Ray Jefferson, Inc., 40 E. Merrick Rd., Freeport, N.Y.—63, 78
Jefferson-Travis Corp., 245 E. 23rd St., New York 10, N.Y. CE—Geo. A. Wilson—1, 4, 63, 65, 78
Jeffrey Mfg. Co., 4th St. & 1st Ave., Columbus, Ohio—27
Jeffries Transformer Co., 1710 E. 57th St., Los Angeles 11, Calif.—77
C. O. Jelliff Mfg. Corp., 200 Pequot Ave., Southport, Conn.—45, 84
Jennings Radio Mfg. Co., 1098 E. William St., San Jose 12, Calif. CE—Jo-Emmett Jennings—13, 14, 67, 80
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Jensen Industries, Inc., 329 S. Wood St., Chicago 12, Ill.—65
Jensen Radio Mfg. Co., 6601 S. Laramie Ave., Chicago 38, Ill. CE—Hugh S. Knowles—42, 77
JO Mfg. Co., S. Gate, Calif.—42
Johns-Manville Co., 22 E. 40th St., New York 16, N.Y.—38
E. F. Johnson Co., 212 2nd Ave. S.W., Waseca, Minn. CE—L. W. Olander—3, 5, 11-19, 35, 37-39, 54, 58, 61, 71, 77
Lloyd S. Johnson Co., 2241 Indiana Ave., Chicago 16, Ill.—72
Paul E. Johnson Mfgrs., 2508-10 S. Pkwy., Chicago 16, Ill.—24, 27
S. C. Johnson & Co. Industrial Div., Racine, Wis.—41, 83
Johnson Bronze Co., New Castle, Pa.—45

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Stupakoff Ceramic Insulators

FOR ALL FREQUENCIES—ALL VOLTAGES—ALL TEMPERATURES

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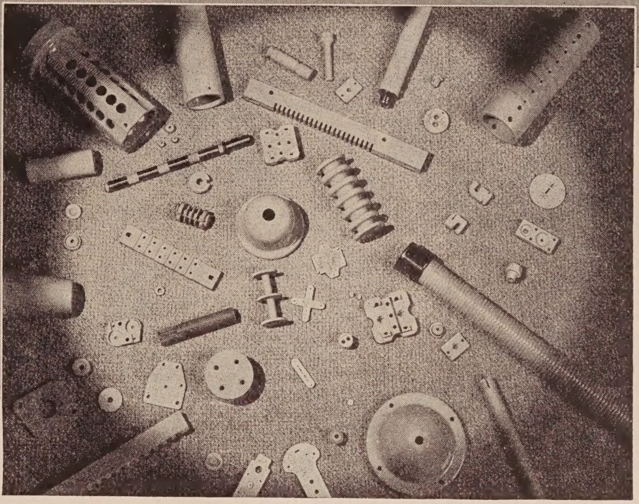
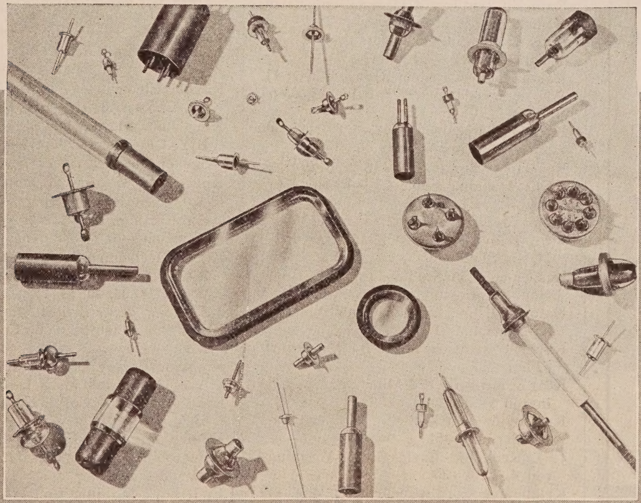


Stupakoff Hermetic Seals



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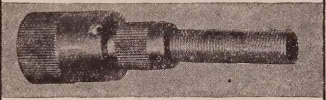
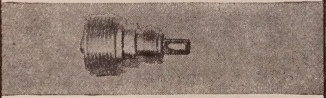


Model M-151

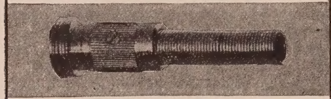
Improved and Standard Type Microphone Jacks and Plugs

Solid, silver plated contact coupling can be unscrewed completely for soldering.



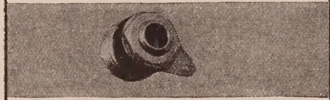
Model M-161

Chassis mounting, solid silver plated contact. Milled flat prevents turning.



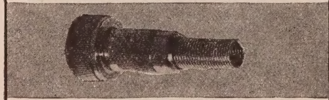
Model M-170

Mates with Model M-151 and M-150 standard solder contact.



Model M-160

Chassis mounting standard. Solder contact.



Model M-150

Standard solder contact. Mates with Models M-170, M-161, and M-160.

PRICE AND DELIVERY UPON REQUEST SEND FOR OUR LATEST BROCHURE.

KINGS ELECTRONICS CO.

372 CLASSON AVE., BROOKLYN 5, NEW YORK

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Johnson Rubber Co., Middlefield, Ohio—38

Johnson Service Co., Altadena, Calif.—27

Johnston Tin Foil & Metal Co., 6016 S. B'way, St. Louis 11, Mo.—45

Joliet Chemicals Ltd., Industry Ave., Joliet, Ill. CE—Frederic Harden—41

H. B. Jones & Co., 2460 W. George St., Chicago 18, Ill.—12, 19, 35, 39, 58, 71

Jones-Dabney Co., Smith & Proback Sts., Louisville, Ky.—41, 83

Jones & Laughton Steel Corp., 40 Longworth St., Pittsburgh 7, Pa.—45

Wylie B. Jones Adv. Co., Binghamton, N.Y.—10

W. B. Jones Spring Co., 124 E. 7th St., Cincinnati 2, Ohio—35

Jordan Co., 51st & S. Merrimac, Chicago 38, Ill.—72

Jorgensen Mfg. Co., 1547 W. Farms Rd., New York 60, N.Y.—51

Journal Co., Milwaukee, Wis.—10

W. Haddon Judson Co., Ardmore, Pa.—27

Jumbo Mfg. Co., Spencer, Iowa—7

K-D Mfg. Co., 526 N. Plum St., Lancaster, Pa.—43

K&K Engineering Co., Bolton, N.Y. CE—Burke A. Knauth—20, 24, 27, 71, 75, 80

K. W. Battery Co., 3705 N. Lincoln Ave., Chicago 13, Ill.—7

Kaar Eng. Co., 619 Emerson St., Palo Alto, Calif. CE—Norman C. Helwig—1, 4, 13, 14, 23, 24, 47, 59, 63, 78

Kahle Eng. Co., 1307 7th St., N. Bergen, N.J.—43

Kainer & Co., 763 W. Lexington St., Chicago 7, Ill.—2

Kalb Electric Co., 2711 Big Bend Blvd., St. Louis 19, Mo.—80

H. E. Kallmann, 417 Riverside Dr., New York 25, N.Y.—20

Kalon Radio Corp., 35 B'way, B'klyn 11, N.Y. CE—H. A. Schnabalk—25, 63-65

Kane Mfg. Corp., Kane, Pa.—11

Karadio Corp., 1400 Harmon Pl., Minneapolis 3, Minn.—2, 63, 78

Roberto Karman, O'Reilly 519, Box 647, Habana, Cuba CE—Raoul Karman—20, 24, 25

Karp Metal Prod. Co., Inc., 126 30th St., B'klyn 32, N.Y. CE—M. J. Karp—11, 16, 61

Kasper-Gordon Studios, Inc., 140 Boylston St., Boston 16, Mass.—66

Kato Eng. Co., 530 N. Front St., Mankato, Minn.—21, 49, 67

Kay Electric Co., 8 Eaton Pl., Newark 7, N.J.—27

Kear & Kennedy, 822 Albee Bldg., Washington 5, D.C.—20

Keasby & Mattison Co., Butler Ave., Ambler, Pa.—51

J. J. Keel, 648 Earle Bldg., Washington 4, D.C.—20

Keikhaefer Corp., Cedarburg, Wis.—49

Llewellyn Bates Keim, 30 W. 58th St., New York 19, N.Y.—20
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Keith Radio Prods., 16th & K Sts., Bedford, Ind.—63

Leo A. Kelley, Jackson Hts., N.Y.—20

M. W. Kellogg Co., 225 B'way, New York 7, N.Y.—20

Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.—68, 73

Kelnor Mfg. Co., Central Tower, San Francisco 3, Calif.—43

Kemet Labs. Co., Inc., W. 117th St. & Madison Ave., Cleveland 1, Ohio—80

Kemlite Labs., 1809 N. Ashland Ave., Chicago 22, Ill. CE—O. H. Floyd—23

Kennecott Wire & Cable Co., Phillipsdale, R.I.—84

Kennedy & Hooper Assoc., 4 Gracewood Park, Cambridge 38, Mass. CE—J. R. Hooper, Jr.; Fitzroy Kennedy—20

Ken-Rad Metal Tubes, Div. of Gen'l Elec. Co., Owensboro, Ky.—80

Walter A. Kent Co., 2826 W. 55th St., Chicago 32, Ill. CE—W. A. Kent—23, 31

Chas. F. Kentworthy, Inc., 195 Piedmont St., Waterbury 23, Conn.—43

Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N.Y. CE—Richard B. Shimer—17, 18, 28, 30, 37, 77
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Kerite Insulated Wire & Cable Co., Inc., 30 Church St., New York 7, N.Y.—12, 84

Kerrigan Lewis Mfg. Co., 4421 W. Rice St., Chicago 51, Ill.—84

Kester Solder Co., 4201 Wrightwood Ave., Chicago 39, Ill. Res. Eng.—P. C. Ripley—72

Keuffel & Esser Co., 300 Adams St., Hoboken, N.J.—26

Keystone Carbon Co., St. Marys, Pa. CE—R. R. Hoffman—22, 45, 70

Keystone Electronics, 50 Franklin St., New York 13, N.Y. CE—S. M. Wertheim—35, 57, 75

Keystone Piezo Co., 2020 W. Liberty Ave., Pittsburgh 26, Pa.—23

Keystone Specialty Co., 1373 Cove Ave., Lakewood, Cleveland 7, Ohio—51

J. R. Kilburn Glass Co., Inc., 22 S. Worcester St., Chartley, Mass.—38

Kimble Electric Co., 2011 W. Hastings St., Chicago 8, Ill.—50

King Labs., 127 Solar St., Syracuse 4, N.Y. CE—Geo. L. King—45
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King Radio Co., Inc., Kokomo, Ind.—63

King Trendle B'casting Corp., 1700 Stroh Bldg., 28 Adams W., Detroit 26, Mich.—10

Kings Electronics Co., 372 Classon Ave., B'klyn 5, N.Y. CE—Pincus Katzoff—12, 14, 19, 35, 39, 58, 79
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Kingsbury Machine Tool Corp., Keene, N.H.—44

Kingston-Conley Electric Co., 68 Brook Ave., N. Plainfield, N.J.—50

Kingston Prods. Corp., Kokomo, Ind.—63

Kinney Mfg. Co., 3529 Washington St., Boston 30, Mass. CE—H. J. Stolz—60

F. J. Kirk Molding Co., 142 Brook St., Clinton, Mass.—51

H. R. Kirkland Co., 8-10 King St., Morristown, N.J.—56

Klett Mfg. Co., 179 E. 87th St., New York 23, N.Y.—24

Klise Mfg. Co., Grand Rapids, Mich.—11

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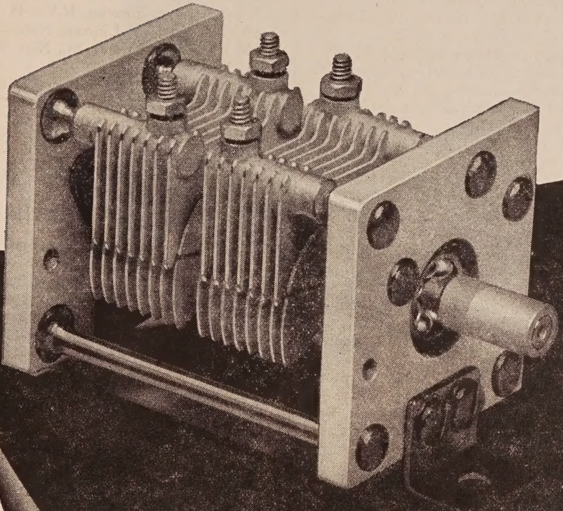
new VHF-UHF CAPACITOR TECHNIQUE



Send card for mechanical and electrical specifications.

Here's the answer to your UHF design problems. Noiseless operation — no rotor contacts — symmetrical layout. The new "VU" type variable capacitors can be used in conventional tuned circuits at frequencies as high as 500 megacycles. Write for folder with full technical data.

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THE HAMMARLUND MFG. CO., INC., 460 W. 34TH ST., NEW YORK 1, N.Y.

MANUFACTURERS OF PRECISION COMMUNICATIONS EQUIPMENT

(Continued from page 64A)

Kluge Electronics Co., 1031 N. Alvarado, Los Angeles 26, Calif. CE—Paul D. Langrick—1, 2, 10, 24, 31, 36, 43, 65, 78, 80

Knickerbocker Annunciator Co., 116 West St., New York 7, N.Y.—84

Knickerbocker Dev. Corp., 116 Little St., Belleville 9, N.J.—24

James Knights Co., Sandwich, Ill. CE—Leon Faber—23, 31

Knox Porcelain Corp., Knoxville, Tenn. —15

Koehler Mfg. Co., Marlboro, Mass.—7

Koh-I-Noor Pencil Co., Bloomsbury, N.J.—26

Koin-Kale, Inc., Portland, Ore.—10

Kold-Hold Mfg. Co., 424 N. Grand Ave., Lansing 30, Mich.—43

Kollath Mfg. Co., 4601 W. Addison St., Chicago 41, Ill. CE—J. F. Lebeda—35, 43

Kollsman Inst. Div. of the Square D Co., 80-08 45th Ave., Elmhurst, L.I., N.Y.—24, 50

Kolster Brandes, Ltd., Sidcup, Kent, England—42

Kopp Glass Inc., 1 E. 42nd St., New York 17, N.Y.—56

Korfund Co. Inc., 48-15 32nd Pl., L.I.C. 1, N.Y.—43

Kraeuter & Co. Inc., 585 18th Ave., Newark 3, N.J.—35

Kraissl Co., 303 Williams Ave., Hackensack, N.J.—60

Walter S. Kraus Co., Woodside, N.Y.—11

Krischer Metal Prods. Co., 631 Kent Ave., B'klyn 11, N.Y. CE—Irving M. Krischer—35

Kreuger & Hudepohl, 232-8 Vine St., Cincinnati 5, Ohio—35

Kuhn & Jacob Molding & Tool Co., 1200 Southard St., Trenton, N.J.—51

Kulka Electric Mfg. Co., Inc., 30 South St., Mt. Vernon, N.Y.—35, 36

Kurman Elec. Co., 35-18 37th St., L.I.C. 1, N.Y. CE—S. Bagno—68, 82

Kurz-Kasch, Inc., 1415 S. B'way, Dayton, Ohio—51

Kux Machine Co., 3930 W. Harrison, Chicago 24, Ill.—43

Kwikheat-Thermostatic Soldering Iron Div. See Sound Equip. Corp. of Calif. —43

Kyle Corp., 9th & Marion St., S. Milwaukee, Wis. CE—H. Taskin—17, 18, 30, 68, 77

L.A.B. Corp., Box 162, Summit, N.J. CE B. A. Wittkuhns—27, 43

L-R Mfg. Co., 65 New Litchfield St., Torrington, Conn.—9

Laboratory Specialties, 144 S. Wabash St., Wabash, Ind.—43

Lacey-Webber Co., Kalamazoo, Mich.—51

Laquer & Chemical Corp., 222 40th St., B'klyn 32, N.Y.—41, 83

Lake Mfg. Co., 2323 Chestnut St., Oakland 7, Calif. CE—J. Alletoon, Jr.—2, 68

Lake Radio Sales Co., Dept. A, 615 W. Randolph St., Chicago 6, Ill.—25

Lamicoid Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.—38, 51

Lampkin Labs., Bradenton, Fla. CE—G. F. Lampkin—31, 48

Lamson & Sessions Co., 1971 W. 85th St., Cleveland 3, Ohio—35

Landers, Frary & Clark, 47 Center St., New Britain, Conn.—43

Landis & Gyr. Inc., 104 5th Ave., New York 3, N.Y.—24

Lane-Wells Co., 5610 S. Soto St., Los Angeles 11, Calif.—75

Langevin Co. Inc., 37 W. 65th St., New York 23, N.Y. CE—W. M. Dallin; W. M. Jurek—2, 17, 18, 24, 30, 59, 63, 67, 77

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Ralph H. Langley, 40 Welton Rd., Gt. Neck, L.I., N.Y.—20

Lapp Insulator Co., 31 Gilbert St., Leroy, N.Y.—5, 15, 71

Lastik Prods. Co., American Bank Bldg., Pittsburgh 19, Pa.—41

E. B. Latham & Co., 250 4th Ave., New York 3, N.Y.—25

Laurehk Radio Mfg. Co., 3918 Monroe Ave., Wayne, Mich.—25

Joseph LaVia, 1473 Greene Ave., Ridgewood 27, N.Y.—73

Lavoie Labs., Matawan-Freehold Rd., Morganville, N.J. CE—August M. Schmelling—1, 2, 4-6, 30, 31, 75, 79

Lawrence Aeronautical Corp., Stiles St., Linden, N.J.—21, 49

Norman H. Lawton, 1775 B'way, New York 19, N.Y.—25

Lawton Prods. Co., Inc., 624 Madison Ave., New York 22, N.Y. CE—Joseph S. Dusek—17, 18, 24, 27, 37, 52, 69, 75, 77

Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif. CE—E. K. Neale —68, 73

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Lear, Inc., 110 Ionia Ave. N.W., Grand Rapids 2, Mich. CE—Garrard Mountjoy—1, 63, 65, 78

LeCarbone Co., Myrtle Ave., Boonton, N.J.—45

Lectradio Corp., 4-42 St. Francis St., Newark 5, N.J. CE—J. Lawrence Cassel; Saul J. Levy—27, 63, 69, 78

Lectrohm, Inc., 5125 W. 25th Pl., Cicero 50, Ill. CE—J. J. Cerny—17, 70

Don Lee B'casting Co., Los Angeles, Calif—10

Lee Eng. & Mfg. Co., Milwaukee 3, Wis.—24, 36

Lee Spring Co., Inc., 30 Main St., B'klyn 1, N.Y. CE—H. Carlson—35

Don Lee Television, 3800 Mount Lee Dr., Hollywood 28, Calif. CE—Harry R. Lubekey—10

Leece-Neville Co., 5363 Hamilton Ave., Cleveland 14, Ohio—50

Leeds & Northrup Co., 4901 Stenton Ave., Phila. 44, Pa. CE—J. W. Harsch —13, 27, 31, 37, 46, 52, 75

LeFebure Corp., Cedar Rapids, Iowa—11, 16, 61

Lehigh Structural Steel Co., 17 Battery Pl., New York 4, N.Y.—4, 5

Lehigh Valley B'casting Co., Allentown, Pa.—10

Leich Electric Co., 1501 Webster St., Dayton, Ohio—50, 68, 73

Leiman Bros., Inc., 156 Christie St., Newark 5, N.J.—43, 60

Leitch Radio Elec., W. Orange, N.J.—25

Lektra Labs., Inc., 30 E. 10th St., New York 3, N.Y. CE—Ben Eisenberg—24

Leland Electric Co., 1501 Webster St., Dayton, Ohio CE—Earl B. George—21, 49

Lenk Mfg. Co., Newton Lower Falls, Mass.—43

Lenkfurt Electric Co., 1138 Howard St., San Francisco 3, Calif. CE—K. E. Appert—24

Lenz Elec. Mfg. Co., 1751 N. Western Ave., Chicago 47, Ill. CE—Raymond G. Zender—12, 84

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Leotone Radio Co., 65-67 Day St., New York 7, N.Y. CE—Les Scharon—25

Lepel High Frequency Labs., Inc., 39 W. 60th St., New York 23, N.Y. CE—Otto Weittmann—36, 52

Lescher & Mahoney, Architects & Engs., 1100 Title & Trust Bldg., Phoenix, Ariz.—20

Leuck Crystal Lab., 2931 T St., Lincoln, Neb. CE—Leo Soderholm—23

LeValley-Vitae Carbon Brush Co., Rombout Ave., Beacon, N.Y.—45

Lewek Electric Co., Lincoln, Neb.—23

H. M. Lewis, 18 E. 48th St., New York 16, N.Y.—20

Lewis Electronics, Route E, Shannon Rd., Los Gatos, Calif. CE—G. W. Lewis—60, 67, 80

Lewis Eng. Co., 52 Rubber Ave., Naugatuck, Conn.—73

Lewis & Sachs Co., Empire State Bldg., New York 1, N.Y.—25

Lewyt Corp., 62 B'way, B'klyn 11, N.Y. CE—A. Wolf—35

H. L. Ley, Radio Mfgrs. Service, 619 4th St. N.W., Canton 3, Ohio—25

Libbey Glass, Div. of Owens-Illinois Glass, Box 919, Toledo 1, Ohio CE—H. R. Schutz—38

Liberty Engraving & Mfg. Co., 2911 S. Central Ave., Los Angeles 11, Calif.—35

Liebel-Flarsheim Co., 303 W. 3rd St., Cincinnati 2, Ohio CE—C. K. Gieringer—24

Lifetime Corp., 1010 Madison Ave., Toledo, Ohio—47

Lifetime Sound Equip. Co., 1101 Adams St., Toledo 2, Ohio CE—W. H. Mannon—25

B. Lilly Varnish & Insulator Co., 670 S. Calif. St., Indianapolis, Ind.—41, 83

Lincoln Fibre & Specialty Co., Newport, Del.—57

Lincrophone Co., 1661 Howard Ave., Utica 3, N.Y. CE—E. W. Linton—2

Linde Air Prods., 30 E. 42nd St., New York 17, N.Y.—43

Lindsay & Lindsay, 222-D W. Adams St., Chicago 7, Ill.—11, 16, 61

J. E. Lingo & Son, Inc., 28th St. & Buren Ave., Camden, N.J. CE—Wesley Thompson—4, 5

Linick, Green & Reed, Inc., 29 E. Madison St., Chicago 2, Ill.—35

Link Eng. Co., 13845 Elmira St., Detroit 27, Mich.—43

Link Radio Corp., 125 W. 17th St., New York 11, N.Y. CE—F. T. Budelman —4, 5, 10, 20, 23, 24, 29, 31, 63, 78, 81

Horace Linton & Bros., 3081 Ruth St., Phila. 34, Pa.—38

Littelfuse, Inc., 4757 Ravenswood Ave., Chicago 40, Ill. CE—F. A. Barta—33, 75

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Litton Eng. Labs., 551 Eaton Ave., Redwood City, Calif. Vacuum Tube Div. —W. G. Wagener—43, 60

Lizen Mfg. Co., 6832 S. Chicago Ave., Chicago 37, Ill.—35

Locke Insulator Corp., S. Charles & Cromwell, Baltimore 3, Md. CE—R. L. McCoy—4, 5, 15, 19, 38

Les Logan Co., 530 Cough St., San Francisco 2, Calif. CE—Les Logan—25, 40

Lohnes & Culver, 922 Munsey Bldg., Washington 4, D.C.—20

Long Island Engraving Co., 19 W. 21st St., New York 10, N.Y.—35

Lorain County Radio Corp., 203 9th St., Lorain, Ohio—10

Lorain Prods. Corp., 1122 F St., Lorain, Ohio—21, 59

Lord Mfg. Co., 1635 W. 12th St., Erie, Pa.—35, 43

J. K. Lorentzen, Inc., 391 W. B'way, New York 12, N.Y.—11, 16, 61

Los Angeles Testing Lab., 1300 S. Los Angeles St., Los Angeles 15, Calif.—20

Louisiana Mach. & Eng. Co., 437 Columbia Ave., Shreveport 52, La.—20

Louthan Mfg. Co., 2000 Harvey Ave., E. Liverpool, Ohio—15, 38

Lowe Bros. Co., 424 E. 3rd St., Dayton, Ohio—41, 83

Lowell Insulated Wire Co., 171 Lincoln St., Lowell, Mass.—84

Lowell Needle Co., 1 Wildore St., Putnam, Conn.—65

Paul Luckenbach & Co., Inc., 312-14 W. 231st St., New York 63, N.Y.—24

J. Milton Luers, 12 Pine St., Mt. Clemens, Mich.—27, 68

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Lukens Steel Co., 73 S. 1st Ave., Coatesville, Pa.—22, 45

Lumenite Electronic Co., 407 S. Dearborn St., Chicago 5, Ill. CE—G. V. Calabrese—27, 68

Lux Clock Co., 95 Johnson St., Waterbury, Conn.—50

Lydon Bros., 229 Colden St., Jersey City, N.J.—72

Lyman Electronic Corp., 12 Cass St., Springfield 4, Mass. CE—Angus W. Blow—2, 16, 20, 24, 25, 36, 54, 59, 67, 75

Lynchburg B'casting Corp., Lynchburg, Va.—10

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McColpin-Christie Corp., 4922 S. Figueroa St., Los Angeles 37, Calif.—67

B. S. McCutchen, Suite 1013, 75 West St., New York 6, N.Y.—20

McDaniel Refractory Porcelain Co., 510 9th Ave., Beaver Falls, Pa.—15, 38

McDonnell & Miller, Rm 1316, Wrigley Bldg., Chicago 4, Ill.—27

McElroy Mfg. Corp., 82 Brookline Ave., Boston 15, Mass. CE—Clayton M. Boudette—24, 40

McFarlin Co., 29 W. Marion Ave., Youngstown, Ohio—75

McGill Mfg. Co., Box 670 Valparaiso, Ind.—72

E. W. McGrade Mfg. Co., 406 W. 34th St., Kansas City, Mo.—1, 63

McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18, N.Y.—9

McInerny Plastics Co., 25 Commerce Ave. S.W., Grand Rapids 2, Mich. CE—S. C. Oldenberger—51, 57

F. H. McIntosh, 710 14th St. N.W., Washington 5, D.C.—20

McIntosh Elect. Corp., 223 N. Calif. Ave., Chicago 12, Ill.—24

McIntyre Co., 15 Riverdale Ave., Newton, Mass.—60

McKesson Appliance Co., 2228 Ashland Ave., Toledo 10, Ohio—27, 34

McKey & Shaw, 1730 Connecticut Ave. N.W., Washington 9, D.C. CE—D. B. McKey—20

McNary & Wrathall, 983 Nat'l. Press Bldg., Washington 4, D.C.—20

T. W. McNeil Eng. Equip. Co., 4057 W. Van Buren St., Chicago 24, Ill.—27

Donald McNicol, 132 Union Rd., Roselle Park, N.J.—20

MB Mfg. Co., Inc., Instr. Div., 331 East St., New Haven 11, Conn. CE—Manfred Johnson—46
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M&M Electronics Mfg. Co., 4419 S.E. Woodstock Blvd., Portland 6, Ore. CE—C. D. Mackey—2, 20, 24, 27, 36, 63, 69

Maas & Waldstein Co., 438 Riverside Ave., Newark 4, N.J. CE—Dr. S. Klinkenstein—41, 83

Maberg Optical, Inc., 235 E. 45th St., New York 17, N.Y.—43

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Machine & Foundry, Inc., W. Springfield, Mass.—43

Machlett Labs., Inc., 1063 Hope St., Springdale, Conn. CE—R. R. Machlett—2, 52, 67, 80

Mack Molding Co., Wayne, N.J.—51

A. D. Mackay, 198 B'way, New York 7, N.Y. CE—Paul H. Nisley—22, 45, 80, 84

Mackay Radio & Telegraph Co., 67 Broad St., New York 4, N.Y.—10

Macmillan Co., 60 5th Ave., New York 11, N.Y. Tech. Editor—C. L. Skelly—9
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Macnick Co., 510 S. Lansing, Tulsa 5, Okla.—27

MacRae's Blue Book, 18 E. Huron St., Chicago 11, Ill.—9

Madison Elec. Prods. Corp., 78 Main St., Madison 3, N.J. CE—A. L. Livera—17, 18, 27, 70, 75
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Madison-Kipp Corp., 200 Waubesa, Madison, Wis.—43

Maedel Publ. House, 593 E. 38th St., B'klyn 3, N.Y. CE—Geo. F. Maedel—9

Magazines, Inc., 188 W. Randolph St., Chicago 1, Ill.—Carl Kopetzky—9

Magnavox Co., 2131 Beuter Rd., Fort Wayne 4, Ind. CE—Robt. H. Dreisbach—43, 47, 63, 64

Magnetic Devices, Inc., Frederick, Md.—68

Magnetic Gauge Co., 60 E. Bartges St., Akron 11, Ohio—27, 68

Magnetic Windings Co., 16th & Butler Sts., Easton, Pa.—17, 77

Magnograph Corp., 5800 W. 3rd St., Los Angeles 36, Calif. CE—Frank Hernfeld—65

Magnostriction Device Corp., Rm. 114, 739 Boylston St., Boston 16, Mass.—42, 55, 65

Maguire Industries, Inc., 1437 R.R. Ave., Bridgeport, Conn. CE—Wasmansdorff—1, 2, 4, 6, 13, 14, 24, 27, 31, 35, 46, 52, 53, 63, 64, 75, 78, 79

Mahoney Specialties Co., 91 James St., Newark 2, N.J.—43

Maico Co., Inc., 21 N. 3rd St., Minneapolis 1, Minn. CE—F. J. Faltico—2, 24, 51, 52

Majestic Radio &. Telev. Corp., St. Charles, Ill. CE—D. E. Foster—63

D. E. Makepeace Co., Pine & Dunham Sts., Attleboro, Mass. CE—Karl McCloud—22, 45

P. R. Mallory & Co., Inc., 3029 E. Washington St., Indianapolis 6, Inc. CE—Dr. F. R. Hensel—6, 13, 30, 39, 45, 58, 59, 67, 70, 73, 81

Maloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.—77

Manhattan Radio Parts Co., 72 Cortlandt St., New York 7, N.Y.—25

J. A. Manning Paper Co., Inc., Clinton & George Sts., Troy, N.Y.—38

Manor Electric Appliance Co., 3238 Southport Ave., Chicago 13, Ill.—35

F. N. Manross & Sons, Div. of Assoc. Spring Corp., Bristol, Conn.—35

Manufacturers' Belt Hook Co., 1321 W. Congress St., Chicago 7, Ill.—35

Manufacturers' Chem. Corp., Berkeley Hts., N.J.—57

Manufacturers' Screw Prods., 270 W. Hubbard St., Chicago 10, Ill.—35

Marathon Battery Co., 840 Henrietta St., Wausau, Wis.—7

Marathon Electric Mfg. Corp., Randolph & Cherry Sts., Wausau, Wis.—50

Marblette Corp., 37-21 30th St., L.I.C., N.Y.—51

Marconi Instruments, Ltd., Hatfield Rd., St. Albans, Hertfordshire, England—6, 31, 46, 48, 52, 75

Marconi's Wireless Telegraph Co., Ltd., Chelmsford, England—10

Marine Instrument Co., 614 Western Reserve Bldg., Cleveland 13, Ohio—2

Marine Radio Service, Inc., 330 Broad Ave., Wilmington, Calif. CE—G. M. Urey—63, 78

Marion Elec. Inst. Co., Stark St. Gate, Manchester, N.H. CE—Roscoe Ammon—36, 46, 70, 75

Maritime Radio Corp., 24 Whitehall St., New York 4, N.Y. CE—N. S. Hainnen—63

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Marshall Radio Eng. Labs., N. Hollywood, Calif.—24

Marsto Instrument Co., 1637A Beacon St., Waban, Mass.—27

Martin Sound Systems, 50 Charles Ave. S.E., Massillon, Ohio—25

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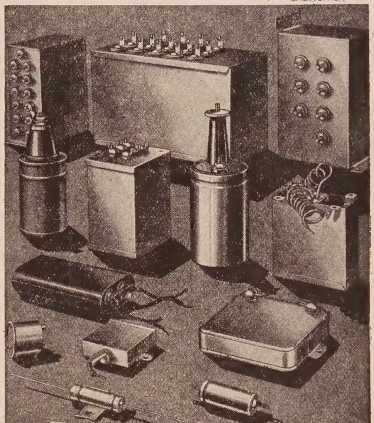

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Medcraft Co., 110 E. 169th St., New York 52, N.Y.—24
Megard Corp., 1601 S. Burlington Ave., Los Angeles 6, Calif.—25
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Merit Coil & Transformer Corp., 4427 N. Clark St., Chicago 40, Ill. CE—Harold Jones—17, 77
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Metaplast Co., 20 W. 19th St., New York 11, N.Y.—43
Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind. CE—F. R. Feinhout—46
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Metron Instrument Co., 432 Lincoln St., Denver 9, Colo.—24, 27
Metropolitan Electronic & Instr. Co., 6 Murray St., New York 7, N.Y. CE—A. Grossmann—25, 63, 75
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Micarta Fabricators, Inc., 5324 Ravenswood Ave., Chicago 40, Ill. CE—E. Metzger—15, 38, 51, 56, 57
Michigan Bell Telephone Co., 1365 Cass Ave., Detroit 26, Mich.—10
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Michigan Wireless Telegraph Co., Wyandotte, Mich.—10
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Micro-Ferrocart Prods., Div. of Maguire Industries, Inc., 375 Fairfield Ave., Stamford, Conn. CE—C. C. Neighbors—1, 17, 18, 22, 30
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James Millen Mfg. Co., Inc., 150 Exchange St., Malden, Mass. CE—R. Wade Caywood—14, 15, 19, 31, 35, 51, 63, 71, 77
August E. Miller, 9226 Hudson Blvd., N. Bergen, N.J.—23
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Minn. Mining & Mfg. Co., 900 Fauquier Ave., St. Paul 6, Minn.—38
Mirror Record Corp., 1133 B'way, New York 10, N.Y. CE—Paul K. Trautwein—65
Mitchell-Hughes Co., Los Angeles, Calif.—31
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Molded Insulation Co., 335 E. Price St., Phila. 44, Pa. CE—Arnold Zillger—51
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Montgomery Bros., 61 Fremont St., San Francisco 5, Calif.—65

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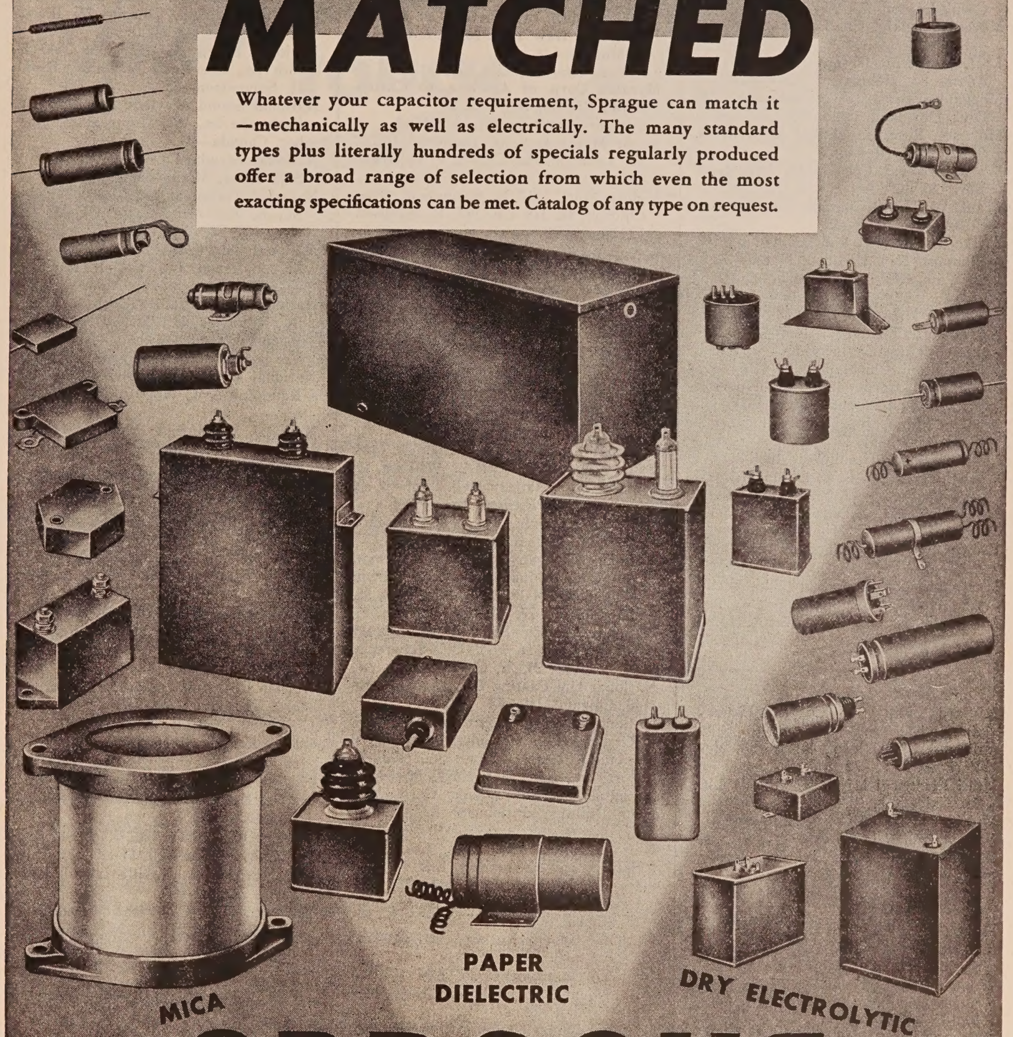

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Wm. Morrow & Co., 425 4th Ave., New York 16, N.Y.—9

Frank W. Morse Co., 301 Congress St., Boston 10, Mass.—35

Morse Twist Drill & Machine Co., 163 Pleasant, New Bedford, Mass.—43

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Donald P. Mossman, Inc., 612 N. Michigan Ave., Chicago 11, Ill.—68, 70, 73

Motion Picture Engineering Corp., 2800 W. Cullom, Chicago 18, Ill.—2

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Mueller Electric Co., 1583 E. 31st St., Cleveland 14, Ohio CE—E. H. De Coningh—35

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Munro Radio Service, 111 Shelby St., Kingsport, Tenn.—25

Eugene Munsell & Co., 200 Varick St., New York 14, N.Y.—15, 38

Munston Mfg. & Service, 43 Vesey St., New York 7, N.Y. CE—R. Muniz; S. J. Eddleton—79

Wm. J. Murdock Co., 158 Carter St., Chelsea 50, Mass. CE—Alfred L. DiMattia—42, 47, 51

J. W. Murphy Co., 10 W. Clark, Chicago 2, Ill.—25

Murphy Varnish Co., 224 McWhorter St., Newark 5, N.J.—41, 83

A. F. Murray, 1616-16th St., N.W., Washington 9, D.C.—20

Murray Hill Books Inc., Tech. Div., 232 Madison Ave., New York 16, N.Y. Mgr.—S. Gordon Taylor—9

Music Master Mfg. Co., 69 W. Washington St., Chicago 2, Ill., CE—J. M. Trittenbach—25

Musitron Co., 223 W. Erie St., Chicago 10, Ill., CE—Vern Giraud—2, 55, 65

Mu-Switch Corp. Inc., 38 Pequit St., Canton, Mass. CE—E. R. Roswell—73

Muter Co., 1255 S. Michigan Ave., Chicago 5, Ill. CE—K. E. Rollefson; C. M. Kramer—13, 14, 17, 18, 42, 68, 70, 73, 77

Mutual Telephone Co., Honolulu, H.—10

Mycalex Corp. of America, 30 Rockefeller Pl., New York 20, N.Y. CE—A. J. Monack—15, 38

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Mycalex Corp. of America, 60 Clifton Blvd., Clifton, N.J.—15, 38

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E. A. Myers & Sons, Radioear Bldg., Mt. Lebanon, Pa., CE—S. F. Lybarger—2

Mykroy, Inc., 1917 N. Springfield Ave., Chicago 47, Ill. CE—W. E. Simpson 15, 38, 51, 71

Na Mac Products Co., 1027 N. Seward St., Los Angeles 38, Calif.—43

The National Acme Co., 180 E. 131st St., Cleveland 8, Ohio—44

National Battery Co., 172 Roblyn Ave., St. Paul, Minn.—7

National Broadcasting Co., 30 Rockefeller Plaza, New York 20, N.Y.—10

National Broadcasting Service, Wellington, New Zealand—10

National Carbon Co., Inc., 30 E. 42nd St., New York 17, N.Y. William H. Fritz—Mgr. Battery Eng. Dept.—7, 45

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National Ceramic Co., 400 Southard St., Trenton 2, N.J.—15, 38

National Company, Inc., 61 Sherman St., Malden, Mass. CE—W. J. Larkin—1, 2, 5, 11, 14-18, 30, 35, 42, 51, 54, 55, 59, 63, 67, 71, 77, 78, 81

National Design Service, 96 Liberty St., New York 6, N.Y. CE—Lawrence Zeitsoff—20, 24, 52, 63, 75

National Die Casting Co., Lincolnwood 48, Chicago, Ill.—43

National Electric Controller Co., 5307 Ravenswood Ave., Chicago 40, Ill.—70

National Electric Mfg. Co., 103 E. Ferry St., Berrien Springs, Mich.—68

National Electric Products Corp., Fulton Building, Pittsburgh 22, Pa.—12, 84

National Electronic Mfg. Co., 22-27 Steinway St., Astoria 4, L.I., N.Y.—4

National Fabricated Products, 2648 W. Belden Ave., Chicago 47, Ill. CE—W. M. Charney—12, 19, 35

National Geophysical Co., Dallas, Tex.—24

National Instrument Co., 246 Walnut St., Newtonville 60, Mass. CE—Robert E. Quinlan—24, 27

National Inter-Communicating Systems, 1531-33 Devon Ave., Chicago 26, Ill. CE—L. R. Panst—2

National Lead Co., 111 Broadway, New York 6, N.Y.—45

National Lock Co., Rockford, Ill.—57

National Lock Washer Co., 40 Hermon St., Newark 5, N.J.—35

National Mineral Co., 2628 N. Pulaski Rd., Chicago 39, Ill.—2, 17, 77, 82

National Moldite Co., 25 Montgomery St., Hillside 5, N.J. CE—Leon Marantz—51

National Plastics Products Co., 2527 Russell St., Detroit 7, Mich.—51

National Radio Institute, 1536 U St., N.W., Washington 9, D.C. CE—Joseph Kaufman—9, 74

Vacuum Engineering Div., National Research Corp., 100 Brookline Ave., Boston 15, Mass.—22, 60

National Scientific Products Co., 2204 West North St., Chicago 25, Ill.—2, 42

National Screw & Mfg. Co., 2440 E. 75th St., Cleveland 4, Ohio CE—D. H. Samuelson—35

National Sound Services, Ltd., 1502 St., Catherine St., W., Montreal 25, Quebec, Canada—25

National Standard Co., 8th & Howard Sts., Niles, Mich.—35, 43

National Technical Labs., 820 Mission St., S. Pasadena, Calif. CE—H. H. Cary—27, 70, 75

National Tile & Mfg. Co., 26 E. Lynn St., Anderson, Ind. CE—P. Mouraud—15, 38

National Union Radio Corp., 57 State St., Newark 2, N.J. DE—Dr. L. Grant Hector—13, 56, 67, 80

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National Varnished Products Corp., 211 Randolph Ave., Woodbridge, N.J.—41, 83

National Vulcanized Fibre Co., Maryland Ave., & Beech, Wilmington 99, Del.—57

Naxon Utilities Corp., 2101—11 W. Walnut St., Chicago 12, Ill.—44

Norman B. Neely Enterprises, 7442 Melrose Ave., Hollywood, Calif.—25

A. L. Nelson & Co., 1620 Euclid St., Santa Monica, Calif. CE—J. B. Allec—77

P. K. Nelson, Tulsa, Okla.—27

Swain Nelson Co., 2320 Glenview Rd., Glenview, Ill. CE—W. R. Daseke—17, 77

Nelson Research Labs., Nelson Building, Cadillac, Mich.—20

George F. Nelson Vacuum Pump Co., 2133 Fourth St., Berkeley 2, Calif.—60

Nepperham Sales Co., Inc., 175 Fifth Ave., New York 10, N.Y. CE—Roger S. Conant—25

Herbert K. Neuber, 1207 Race St., Philadelphia 7, Pa.—20

The Neville Co., Neville Island, Pittsburgh 26, Pa.—41

New England Electrical Works, Inc., 365 Main St., Lisbon, N.H.—5, 84

New England Etching & Plating Co., 25 Spring St., Holyoke, Mass.—11, 16, 61

New England Mica Co., Inc., Waltham, Mass.—38

New England Screw Co., Keene, N.H.—35

New Hampshire Mica & Mining Co., Washington St., Keene, N.H.—38

New Haven Clock Co., New Haven 4, Conn.—68, 73

New Jersey Bell Telephone Co., Newark, N.J.—10

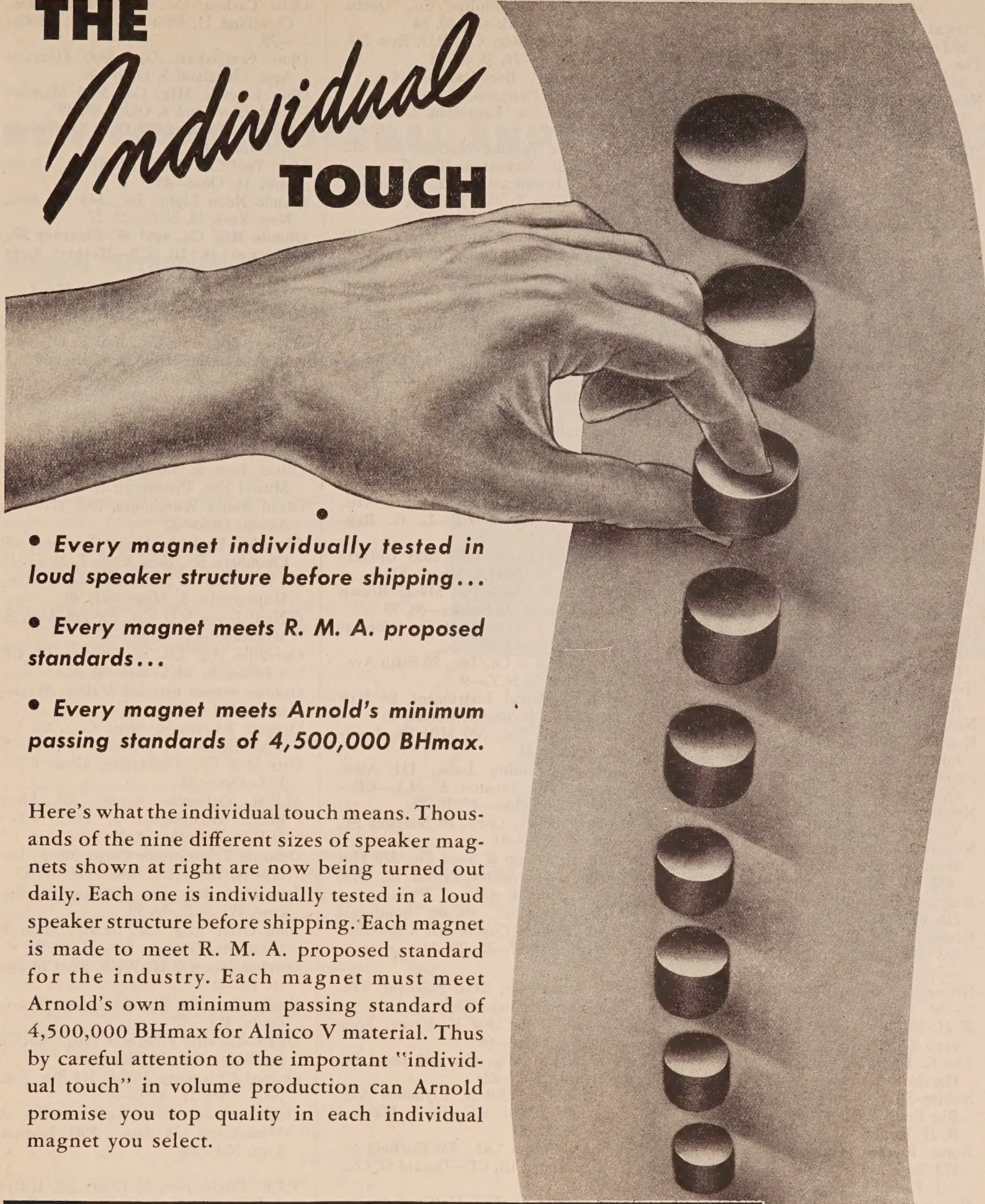
New Jersey Jewelers Supply, 280 Plane St., Newark 12, N.J.—43

New Jersey Machine Corp., Willow Ave., at 16th St., Hoboken, N.J.—60

New Jersey Wood Finishing Co., Elec-

(Continued on page 74A)

THE *Individual* TOUCH



- ***Every magnet individually tested in loud speaker structure before shipping...***
- ***Every magnet meets R. M. A. proposed standards...***
- ***Every magnet meets Arnold's minimum passing standards of 4,500,000 BHmax.***

Here's what the individual touch means. Thousands of the nine different sizes of speaker magnets shown at right are now being turned out daily. Each one is individually tested in a loud speaker structure before shipping. Each magnet is made to meet R. M. A. proposed standard for the industry. Each magnet must meet Arnold's own minimum passing standard of 4,500,000 BHmax for Alnico V material. Thus by careful attention to the important "individual touch" in volume production can Arnold promise you top quality in each individual magnet you select.

THE ARNOLD ENGINEERING COMPANY

147 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS

Specialists in the Manufacture of ALNICO PERMANENT MAGNETS

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trical Insulation Dept., Woodbridge, N.J.—38
The New Jersey Zinc Co., 160 Front St., New York 7, N.Y.—43
New Method Steel Stamps, Inc., 149 Jos. Campau Ave., Detroit 7, Mich. —43
New Products Corp., Benton Harbor, Mich.—64
New Whitaker Cable Corp., Kansas City, Mo.—12
New Wrinkle, Inc., 1771 Springfield St., Dayton 3, Ohio Tech. Dir.—Wm. A. Waldie—41
New York Solder Co., Inc., 15 Crosby St., New York 13, N.Y.—72
New York Testing Labs., 80 Washington St., New York 6, N.Y.—20
New York Transformer Co., 62 William St., New York 5, N.Y. CE—Zigmond Burzycki—75, 77
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New York YMCA Schools, 5 W. 63rd St., New York 23, N.Y. Exec. Dir. —W. A. Lotz—74
Newark Electric Co., Inc., 115 W. 45th St., New York 19, N.Y.—25
Newark Radio Labs., Bridge Road, Eastham, Mass.—43
Newark Transformer Co., 17 Frelinghuysen Ave., Newark 5, N.J. CE—O. A. Keefe—17, 18, 44, 77
Newcastle Broadcasting Co., Newcastle, N.S.W., Australia—10
Newcomb Audio Products Co., 2815 S. Hill St., Los Angeles 7, Calif. CE—Donald Warner—2, 65
Newcomb Spring Corp., 238 40th St., Brooklyn 32, N.Y.—35
Newman X-Ray Corp., Aurora, Ill.—80
Newport Rolling Mill Co., Ninth & Lowell Sts., Newport, Ky.—22, 45
Newton Co., 244 W. 23rd St., New York 11, N.Y.—77
Newton Junior Corp., 682 Third Ave., West Haven, Conn.—72
Niagara Electric Improvement Corp., 51 E. 42nd St., New York 17, N.Y. —77
Niagara Electrical Instrument Co., 204-210 Franklin St., Buffalo 2, N.Y.—46
Niagara Insul Bake Specialty Co., Inc., 483 Delaware Ave., Albany 2, N.Y. —51
Nixon Nitration Works, Nixon, N.J. —51
F. H. Noble Co., 535 W. 59th St., Chicago 21, Ill.—35
The K. B. Noble Co., 450 Capitol Ave., Hartford 6, Conn.—43
Noblitt-Sparks Industries, Inc., 13th & Big Four R.R., Columbus, Ind. CE—B. H. Erwin—63
Noma Electric Corp., Capacitor Div., 178 Sargeant St., Holyoke, Mass. CE —J. E. Funk—13, 51, 84
Nonotuck Mfg. Co., Water St., Holyoke 1, Mass.—84
Norclay Radio Co., Independence, Mo. —23
Nord Mfg. Co., Bridgeport, Conn. CE—Ernst Nordberg—13
Nordendale Mfg. Co., 2100 Fulton St., Chicago 12, Ill.—43
North American Philips Co., Inc., 100 E. 42nd St., New York 17, N.Y.—23, 80, 84
North American Philips Co., Dobbs Ferry, New York—23, 80, 84
North Electric Mfg. Co., P.O. Box 267, Galion, Ohio—19, 35, 68, 73
North Jersey Broadcasting Co., 7 Church St., Paterson, N.J.—10
North Radio Co., Laurelton, L.I., N.Y. —25
North Shore Talking Machine Co., 612 Church St., Evanston, Ill.—25
Northern Broadcasting & Publishing Ltd., 25 King St. W., Toronto, Canada —9, 10
Northern Communications Mfg. Co., 210 E. 40th St., New York 16, N.Y.—1, 4, 5, 79
Northern Electric Co., 5224 North Kedzie, Chicago 25, Ill.—84
Northern Electric Co., Ltd., 26 Shearer St., Montreal, Canada—25
Northern Industrial Chemical Co., 7-11 Elkins St., South Boston 27, Mass. —35, 51
Northern Labs., Ltd., 3-01 27th Ave., Long Island City 2, N.Y. CE—John Zaleski—75
Northern Mfg. Co., Inc., 36 Spring St., Newark 2, N.J.—80
Northern Radio Co., 2208 Fourth Ave., Seattle 1, Wash.—CE—L. G. Reynolds—63, 78
Northwest Plastics, Inc., 2333 University Ave., St. Paul 4, Minn.—51
Northwestern Clock Co., 514-15 Brown Bldg., Omaha, Nebraska—68, 73
Norton Co., 1 New Bond St., Worcester 6, Mass.—43, 45
W. W. Norton & Co., Inc., 70 Fifth Ave., New York 3, N.Y.—9
Norton Electrical Instrument, 85 Hilliard St., Manchester, Conn.—46
Norton Labs., Inc., 520 Mill St., Lockport, N.Y.—51
Nothelfer Winding Labs., 111 Albemarle Ave., Trenton 8, N.J.—CE—John J. Nothelfer—17, 18, 77
Nukem Products Corp., 70 Niagara St., Buffalo, N.Y.—41
Numberall Stamp & Tool Co., 379 Huguenot Ave., Staten Island 12, N.Y. CE—J. Merkel—43
Nu-Products Inc., 707-09 Southwest Blvd., Kansas City 8, Mo. CE—Clarence E. Salxer—23, 25, 32

OK Machine Co., 2131 Fairfield Ave., Ft. Wayne 6, Ind.—43
OK Radio Lab. 1504 E. B'way, Long Beach 3, Calif.—66
OZ Electrical Mfg. Co., 262 Bond St., B'klyn 2, N.Y.—22
Oak Mfg. Co., 1260 N. Clybourn Ave., Chicago 10, Ill. CE—E. J. Mastney —14, 64, 73, 81
O'Connell Radio Lab., 424 Garfield St., W., Freeport, Ill. CE—Gerald O' Connell—2
Odell Eng. Co., 3903 Nottingham Rd., Detroit 24, Mich.—24
J. P. O'Donnell & Sons, 316 Stuart St., Boston 16, Mass. CE—J. P. O'Donnell —13
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Offner Electronics Inc., 5320 N. Kedzie, Chicago 25, Ill.—24
Ogden Chem. Labs., 324 E. 3rd St., Cincinnati 2, Ohio—72
Ohio Brass Co., Mansfield, Ohio—15
Ohio Carbon Co., 12508 Berea Rd., Cleveland 11, Ohio CE—L. L. Stoffel —70
Ohio Crankshaft Co., 3800 Harvard Ave., Cleveland 5, Ohio—36
Ohio Electric Mfg. Co., 5900 Maurice Ave., Cleveland 4, Ohio—44, 49
Ohio Sound Corp., 929 Dorr St., Toledo 7, Ohio—64
Ohio Tool Co., 3160 W. 106th St., Cleveland 11, Ohio—49
Claude Neon Lights Inc., 545 5th Ave., New York 18, N.Y.—23, 27
Ohmite Mfg. Co., 4967 W. Flournoy St., Chicago 44, Ill. CE—Herbert Levy 4, 6, 17, 70, 73
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Oiljak Mfg. Co., Inc., Montclair, N.J. —45
O'Keefe & Merrit Co., 3700 E. Olympic Blvd., Los Angeles 23, Calif.—59
Okonite Co., Passaic, N.J.—84
Otto K. Olesen Co., 1560 Vine St., Hollywood 28, Calif. CE—J. J. Lamb—11, 16, 61
Olin Industries Inc., East Altom, Ill.—7
Oliver Iron & Steel Corp., S. 10th & Muriel Sts., Pittsburgh 3, Pa.—35
Olson Radio Warehouse, 73A Mill St., Akron, Ohio—25
Olympic Tool & Mfg. Co. Inc., 39 Chambers St., New York 7, N.Y.—16
D. W. Onan & Sons, Royalston Ave., Minneapolis 5, Minn.—21, 49
O'Neill-Irwin Mfg. Co., 316 8th Ave., S. Minneapolis 2, Minn.—43
Operadio Mfg. Co., St. Charles, Ill. CE —Justin F. McCraigh—2, 42
Orange Screen Co., 515 Valley, Maplewood, N.J.—43
Oregon Electronic Mfg. Co., 206 W. Washington St., Portland 4, Ore.—25
Oris Mfg. Co., Thomaston, Conn. CE—J. L. Oris—51
M.F.M. Osbourne Assoc., 703 Albee Bldg., Washington 5, D.C., CE—M.F.M. Osborne—4, 20
Osborne Transformer Corp., 948 E. Lafayette, Detroit 7, Mich.—17, 18, 77
John Oster Mfg. Co., 1530 Ann St., Racine, Wis.—27, 49, 50
John Oster Mfg. Co., of Ill., Main & West Sts., Geneva, Ill.—27, 49, 50
Otarion Inc., 442 N. Wells St., Chicago 10, Ill.—2
Outlet Co., 176 Waybosset St., Providence, R.I.—10
Owens-Corning Fiberglas Corp., Nicholas Bldg., Toledo, Ohio—38
Oxford University Press, 114 5th Ave., New York 11, N.Y.—9
Ozalid Prods. Div., Gen'l Aniline & Film Corp., 25 Ansco Rd., Johnson City, N.J.—26

P.I.B. Prods. Inc., 66 Court St., B'klyn 2, N.Y. CE—F. J. Gaffney—20, 27, 31, 36, 46, 62, 69, 75, 79
Pacent Eng. Corp., 79 Madison Ave., New York 16, N.Y.—20
Pacific Clay Prods., 306 West Ave., 26 Box 145, Sta. A, Los Angeles 31, Calif. EE—R. W. Hubert—15, 38
Pacific Plastic & Mfg. Co., Inc., 4865 Exposition Blvd., Los Angeles 16, Calif.—43

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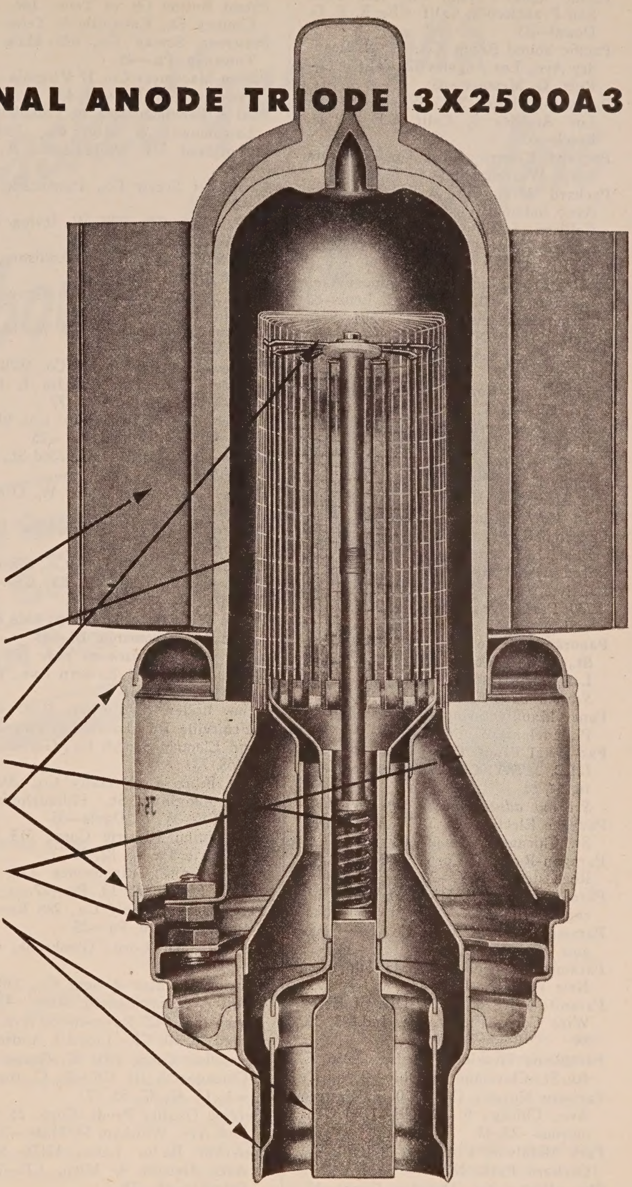
Eimac REG. U. S. PAT. OFF. **TUBES** THE COUNTERSIGN OF DEPENDABILITY IN ANY ELECTRONIC EQUIPMENT

NEW EIMAC EXTERNAL ANODE TRIODE 3X2500A3



Rugged mechanical construction
Outstanding electrical efficiency

In the new 3X2500A3, Eimac engineers have developed a highly efficient external anode triode which, in Class C service, delivers up to 5 KW output at a plate voltage of only 3,500 volts. The mechanical design is radically simple, incorporating a "clean construction" which gives short, low inductance heavy current connections that become an integral part of the external circuits at the higher frequencies.

The external anode, conservatively rated at 2500 watts dissipation, has enclosed fins so as to facilitate the required forced air cooling.

Non-emitting vertical bar grid does not cause anode shadows ordinarily created by heavy supports in the grid structure.

Thoriated tungsten filament. Note unusually large filament area, and close spacing.

Filament alignment is maintained throughout life of the tube by special Eimac tensioning method.

New glass-to-metal seals do not have the RF resistance common to iron alloy seals, nor the mechanical weaknesses of the feather-edged types.

Grid ring terminal mounts a cone grid support which acts as a shield between plate and filament.

A coaxial filament stem structure forms the base of the tube. This makes possible proper connections to the filament lines.

Grid and filament terminal arrangements make it possible to install or remove the 3X2500A3 without the aid of tools.

The new mechanical and electrical features of the Eimac 3X2500A3 external anode triode make it valuable for use on the VHF as well as low frequencies. More complete data and information yours for the asking.

FOLLOW THE LEADERS TO

Eimac REG. U. S. PAT. OFF. **TUBES**

EITEL-McCULLOUGH, INC., 1123 San Mateo Ave., San Bruno, Calif.

Plants located at: San Bruno, Calif., and Salt Lake City, Utah

Export Agents: Frazar and Hansen, 301 Clay St., San Francisco 11, Calif., U.S.A.

TYPE 3X2500A3 — MEDIUM MU TRIODE

ELECTRICAL CHARACTERISTICS

Filament: Thoriated Tungsten	
Voltage	7.5 volts
Current	48 amperes
Amplification Factor (Average) 20	
Direct Interelectrode Capacitances (Average)	
Grid Plate	20 $\mu\mu$fd.
Grid Filament	48 $\mu\mu$fd.
Plate Filament	1.2 $\mu\mu$fd.
Transconductance (i_B=830 ma., E_B=3000 v.)	20,000 μmhos

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Pacific Radio Crystal Co., 1035 Post, San Francisco 9, Calif. CE—R. E. G. Dewal—23

Pacific Sound Equip. Co., 130 N. Beaudry Ave., Los Angeles 12, Calif. CE—Robt. G. Metzner—65

Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles 5, Calif. CE—R. H. Freck—63

Packard Electric Div., Gen'l Motors Corp., Warren, Ohio—50, 69, 84

Packard Mfg. Corp., 2900 Columbia Ave., Indianapolis 7, Ind. CE—E. E. Collison—64, 69

Paine Co., 2961 Carroll Ave., Chicago 12, Ill.—43

Paisley Prods. Inc., 1770 Canalport Ave., Chicago 16, Ill. CE—E. C. Lenz—83

Palatine Industrial Co., 111 5th Ave., New York 3, N.Y.—43

Palmer Electric & Mfg. Co., Wakefield, Mass.—17, 77

Palnut Co., 94 Cordier St., Irvington 11, N.J. CE—E. L. Johnson—35
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Pan-American Electric Co. Inc., 132 Front St., New York 5, N. Y. CE—Louis F. Biosca—24, 79

Pan-Electronic Labs. Inc., 500 Spring St. N.W., Atlanta 1, Ga.—23

Pancro Mirrors Inc., 2958 Los Feliz Blvd., Los Angeles 26, Calif. CE—Alfred A. Newell—51A

Panelyte Corp., St. Regis Paper Co., 230 Park Ave., New York 17, N.Y. —51

Panoramic Radio Corp., 242-250 W. 55th St., New York 19, N.Y. CE—Joseph I. Heller—1, 31, 63, 75
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Paper Manufacturing Co., 5 & Willow, Philadelphia 23, Pa.—38

Par-Metal Prods. Corp., 32-62 49th St., L.I.C. 3, N.Y. CE—A. A. Parmet—11, 16, 54, 61
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Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.—27, 68

Paragon-Revolute Corp., 97 South Ave., Rochester 4, N.Y.—26

Paraloy Co., 600 S. Michigan Ave., Chicago 5, Ill.—65

Paramount Paper Tube Co., 801 Glasgow Ave., Ft. Wayne 4, Ind.—38

Paramount Prods. Co., 545 5th Ave., New York 17, N.Y.—43

Paranite Wire & Cable, Div. of Essex Wire Corp., Ft. Wayne, Ind.—5, 12, 84

Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio—2

Parisian Novelty Co., 3510 S. Western Ave., Chicago 9, Ill. CE—L. J. Komorous—23, 43

Park Metalwire Co., Inc., 28 Bank St., Orchard Park, N.Y.—43

Chas. Parker Co., Meriden, Conn.—35

Parker Eng. Prods. Co., 16 W. 22nd St., New York 10, N.Y.—43, 51

Parker-Kalon Corp., 200 Varick St., New York 14, N.Y. CE—Walter A. Tolker—35

Partlow Corp., 2 Campion Rd., New Hartford, N.Y.—68

Pass & Seymour Inc., Syracuse 9, N.Y. —39, 59, 73

Lawrence F. Passow, 1833 S. Michigan Ave., Chicago 16, Ill.—24

Patent Button Co. of Tenn., Inc., 2221 Century St., Knoxville 8, Tenn.—51

Patterson Screen Co., 625 Main St., Towanda, Pa.—45

Patton-MacGuyer Co., 17 Virginia Ave., Providence 5, R.I.—35, 43

Paul & Beekman, Div. of Philadelphia, Lawnmower & Mfg. Co., 18th & Courtland Sts., Philadelphia 20, Pa. —22

Pawtucket Screw Co., Pawtucket, R.I. —35

C. F. Pease Co., 2601 W. Irving Park Rd., Chicago 18, Ill.—26

Peck & Harvey, 4327 W. Addison, Chicago 41, Ill.—26

Peck Spring Co., Inc., 20 Grove St., Plainville, Conn.—35

Peerless Electric Co., 740 W. Market St., Warren, Ohio—50

Peerless Electrical Prods. Co., 6920 McKinley Ave., Los Angeles 1, Calif. CE—E. M. Keillor—17, 77

Peerless Electronic Equip. Co., 912 S. 2nd St., Louisville 3, Ky.—25

Peerless Labs. Inc., 115 E. 23rd St., New York 10, N.Y.—73

Peerless Mfg. Corp., 1400 W. Ormsby, Louisville 10, Ky.—17

Walter E. Peery, 17 Fairview Place, Morristown, N.J.—20

G. H. Peirce Radio Eng. Co., 618 Girot St., New Orleans 12, La. CE—Geo. H. Peirce—25

Peirce Wire Recorder Corp., 1328 Sherman Ave., Evanston, Ill.—65
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Pemco Corp., 5601 Eastern Ave., Baltimore 24, Md.—15, 51

Penn Boiler & Burner Mfg. Corp., Fruitville Rd., Lancaster, Pa.—21, 49

Penn Electric Switch Co., Goshen, Ind. —68, 73

Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 34, Pa. CE—W. K. Davis—35

Penn-Union Electric Corp., 315 State St., Erie, Pa.—5, 22, 35

Pennsylvania Transformer Co., Box 6208, Pittsburgh 12, Pa.—77

Pennypacker Supply Co., 288 Race St., Philadelphia 6, Pa.—25

Perkin-Elmer Corp., Glenbrook, Conn. —51A

Perkins Machine & Gear Co., 130 Circuit Ave., Springfield, Mass.—43

Permo Inc., 6427 Ravenswood Ave., Chicago 26, Ill. CE—Lloyd J. Andres—65

Permoflux Corp., 4900 W. Grand Ave., Chicago 39, Ill. CE—R. C. Bierman —1, 17, 42, 47, 55, 77

Perrine Quality Prods. Corp., 55 Rumford Ave., Waltham 54, Mass.—7

Peterkin Radio Labs., 13176 Manor Ave., Detroit 4, Mich. CE—E. P. Peterkin—25, 32

Peters Chem. Mfg. Co., 3623 Lake St., Melrose Park, Ill.—57

Petersen Radio Co., 2800 W. B'way, Council Bluffs, Iowa CE—W. P. Petersen—23

E. D. Peterson, 700 N. Michigan Ave., Chicago 11, Ill.—25

Petty Geophysical Eng. Co., San Antonio, Tex.—24

Pfaltz & Bauer Inc., 350 Fifth Ave., New York 1, N.Y.—47

Pfanstiehl Chem. Co., 104 Lake View Ave., Waukegan, Ill.—45, 65, 69

Phelps-Dodge Copper Prods., Ft. Wayne, Ind.—84

Phelps High Fidelity System, YMCA 215 W. 23rd St., New York 11, N.Y. —66, 74

Pheoll Mfg. Co., 5700 Roosevelt Rd., Chicago 50, Ill. CE—F. P. Tisch—35

Petroleum Specialities Inc., 400 Madison Ave., New York 17, N.Y.—41, 83

Phil-American Inc., 528 E. 72nd St., New York 21, N.Y.—68

Philadelphia Insulated Wire Co., 200 N. 3rd St., Philadelphia 6, Pa.—84

Philadelphia Mica Corp., 3515 N. 10th St., Philadelphia 40, Pa.—15, 38

Phila. Rust-Proof Co., 3229 Frankford Ave., Philadelphia 34, Pa.—43

Phila. Steel & Wire Corp., Penn St. & Belfield Ave., Philadelphia 44, Pa. —35

Philco Prods. Inc., Tioga & C Sts., Philadelphia 34, Pa. CE—Palmer M. Craig—63, 80

Philharmonic Radio Corp., 528 E. 72nd St., New York 21, N.Y. CE—Victor Brociner—27, 64, 65, 70

Philips Metalix Corp., 419 4th Ave., New York 16, N.Y.—80

Phillips Drill Co., 1537 Cortland St., Chicago 22, Ill.—35

Phillips Electrical Supply Co., 923 E. 163rd St., New York 59, N.Y.—25

Philmore Mfg. Co., Inc., 113 University Pl., New York 3, N.Y. CE—Reginald Burke—13, 35, 39, 59

Philson Mfg. Co., Inc., 156 Chambers St., New York 7, N.Y.—4

Pho-Tron Instrument Co., 5713 Euclid Ave., Cleveland 3, Ohio—27

Phonette Co. of America, 7122 Melrose Ave., Los Angeles 46, Calif.—23

Phonograph Needle Mfg. Co., Inc., 42 Dudley St., Providence 5, R.I.—26, 35, 65

Photo Reproducing Equip. Co., Chatham, N.J.—26

Photo & Sound Inc., 141 New Montgomery St., San Francisco 5, Calif. CE—Paul A. Williams—66, 76

Photobell Div., Liquidometer Corp., 116 Nassau St., New York 7, N.Y. CE—A. Edelman—27

Photoswitch Inc., 77 B'way, Cambridge 42, Mass. CE—L. D. Sibley—27, 68, 73

Photovolt Corp., 95 Madison Ave., New York 16, N.Y.—27

Photox Silk Screen Supply Co., 30 Irving Place, New York 3, N.Y.—35

Physicists Res. Corp., 321 S. Main St., Ann Arbor, Mich. Chief Physicist—Leslie M. Jones—27

Greenleaf W. Pickard, Perikon Cottage, Seabrook, N.H.—20

Pier Equip. Mfg. Co., Benton Harbor, Mich.—67

Pierce Lab. Inc., Summit, N.J.—57, 68

Pierce Paper Prods. Co., 2712 Auburn St., Rockford, Ill. CE—David P. Shupe—5, 13, 15, 54,
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Pierce Renewable Fuse Inc., 111 Hertel Ave., Buffalo, N.Y.—33

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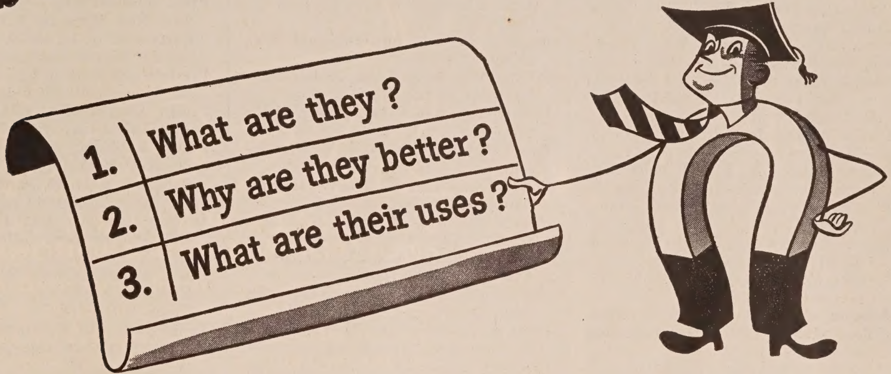
The 3 "most-asked" questions about Carbonyl Iron Powders


1. What are they?
2. Why are they better?
3. What are their uses?

FOR WARTIME USES, design engineers asked these three questions.

In peacetime, as design engineers plan for peacetime equipment, the same questions are asked.

"WHAT ARE THEY?"

G.A.F. Carbonyl Iron Powders are obtained by thermal decomposition of iron penta-carbonyl. There are five different grades in production, designated as "L," "C," "E," "TH," and "SF" Powder. Each of these five types of iron powder is obtained by special processing methods and has its special field of application.

The particles making up the powders "E," "TH," and "SF" are spherical with a characteristic structure of concentric shells. The particles of "L" and "C" are made up of homogenous spheres and agglomerates.

"WHY ARE THEY BETTER?"

Carbonyl Iron Powders are better because of their unique spherical shape, shell structure, particle size distribution, high degree of purity, and freedom from stress.

Their stability against magnetic shock, temperature changes, and time (aging) is of the highest order.

Permeabilities range up to 70 with low eddy-current losses. Q values are the highest obtainable because of extremely small eddy-current and hysteresis losses.

Carbonyl Iron Powders are better as electromagnetic material over the entire communication frequency spectrum.

"WHAT ARE THEIR USES?"

Carbonyl Iron Powders are used for electromagnetic cores and structures for widely different purposes. Typical applications are: use in coils for permeability tuning; use in E-cores in filter coils, for cup shields in coils, and for high-frequency choke cores (with sealed-in leads).

"L" and "C" powders are also used as powder metallurgical material because of their low sintering temperatures, high tensile strengths, and other very desirable qualities. Sintering begins below 500° C. and tensile strengths reach 150,000 psi. Compacts can be made having regular pronounced porosity to function as a spongy mass. Compacts can also be made of highest density for excellent magnetic properties.

Further information can be obtained from the Special Products Sales Dept., General Aniline & Film Corporation, 270 Park Avenue, New York 17, N. Y.

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Pierce Roberts Rubber Co., 1450 Heath Ave., Trenton 6, N.J. CE—E. W. Malick—51
Piezo Developments Inc., Dumont, N.J.—23
Piezo Electric Prods. Co., 104 5th Ave., B'klyn Park 25, Md.—23
Piezo Mfg. Corp., 110 E. 42nd St., New York 17, N.Y. CE—Chas. Ligh—35, 43
Pilot Radio Corp., 37-06 36th St., L.I.C. 1, N.Y. CE—L. C. Shapiro—63
Pioneer Asphalt Co., 435 N. Michigan Ave., Chicago 11, Ill.—41
Pioneer Gen-E-Motor Corp., 5941 Dickens Ave., Chicago 39, Ill. CE—Harry Goldberg—21, 49
Pitman Publ. Corp., 2 W. 45th St., New York 19, N.Y.—9
F. D. Pitts Co., Newton, Mass.—25
Pittsburgh Carbon Brush Co., 811 Fulton St., Pittsburgh 12, Pa.—45
Pittsburgh Screw & Bolt Co., Midland Ave., Port Chester, N.Y.—35
Pittsburgh Testing Lab., 1330 Locust St., Pittsburgh 19, Pa.—20
Plaskon Co., 2112 Sylvan Ave., Toledo 6, Ohio CE—J. H. Jeffery—51
Plastic Fabricators Co., 500 Sansome St., San Francisco 11, Calif. CE—I. M. Montalto—51
Plastic Mfgrs. Inc., Stamford, Conn.—51
Plastic Metals Div., Nat'l Radiator Co., Johnstown, Pa. CE—B. T. du Pont—45
Plastic Molding Corp., Sandy Hook, Conn.—51
Plastic Wire & Cable, Jewett City, Conn.—12, 84
Plasticraft Associates, 155 E. Ohio St., Chicago 11, Ill.—51
Plastoid Corp., 23 W. 44th St., New York 18, N.Y. CE—D. D. McQuiston—5, 84
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Plax Corp., 117 Spruce St., Hartford, Conn. SE—J. Q. Burgess—41, 57
Plume & Atwood Mfg. Co., 470 Bank St., Waterbury, Conn.—35
Plymold Corp., Lawrence, Mass.—4, 5
Poinsetta Inc., 95 Cedar St., Pitman, N.J.—51
Polarad Electronics Co., 135 Liberty St., New York 6, N.Y. CE—P. H. Odessey—2, 10, 20, 24, 48, 52, 53, 62, 63, 69, 78, 82
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Polaroid Corp., Cambridge, Mass.—43
Polk Electronic Co., 119 Bleecker St., New York 12, N.Y.—36
Pollak Mfg. Co., 541 Devon St., Arlington, N.J.—43
W. J. Polydoroff, 205 W. Wacker Dr., Chicago 6, Ill.—20
Polymet Condenser Co., 699 E. 135th St., Bronx 54, N.Y.—13
Polytechnic Res. & Dev. Co., Inc., 66 Court St., B'klyn 2, N.Y.—20, 24
Polytron Corp., 133 Martine Ave., White Plains, N.Y. CE—Hubert L. Shortt—4, 5, 17, 18, 44
Poray Inc., 3345—69 W. Grand Ave., Chicago 51, Ill. CE—B. Csanda—35
Porcelain Insulator Corp., 447 E. Main St., Lima, N.Y.—15, 38
Porcelain Prods. Inc., 124 W. Front St., Findlay, Ohio—15, 38
Portable Prods. Corp., C.J. Tagliabue Div., 540 Park Ave., B'klyn 5, N.Y.—27, 34
Portable Prods. Corp., 233 B'way, New York 7, N.Y.—34
Porter Metal Prods. Co., 121 Ingraham St., B'klyn 6, N.Y. CE—Eugene A. Stonehill—11, 16, 35
Positive Lock Washer Co., 181 Miller St., Newark 5, N.J.—35
Frederick Post Co., 3650 N. Avondale, Chicago 18, Ill. CE—W. Pfannkuche—26
Post & Telegraph Dept., Bangkok, Siam (Thailand)—10
Post & Tele. Dept., Kula Lampur, Malaya—10
T. W. Potter Co., 1950 Sheridan Rd., N. Chicago 14, Ill.—13
Potter & Brumfield Mfg. Co., Inc., 617 N. Gibson St., Princeton, Ind. CE—C. W. Key—68
Potter Electric Signal & Mfg. Co., Century Bldg., St. Louis 1, Mo.—25
Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N.Y. CE—John T. Potter—27
Potter & Rayfield Inc., Hemphill Ave., Atlanta, Ga.—43
Powder Metallurgy Corp., 30-48 Greenpoint Ave., L.I.C., N.Y.—22
Power City Radio Co., Sioux Falls, S.D.—45
Power Equip. Co., Electronics Div., Detroit, Mich.—25
Power Equip. Co., 627 W. Alexandrine, Detroit 1, Mich.—2, 67
Powers Electronic & Comm. Co., New St., Glen Cove, L.I., N.Y.—25
Powers Regulator Co., 2720 Greenview Ave., Chicago 14, Ill.—75
Practo Photo Accessories Corp., 383 Pearl St., B'klyn 1, N.Y.—43
Pratt & Lambert Inc., 75 Tonawanda St., Buffalo 7, N.Y.—41, 83
Precimet Labs., 64 Fulton St., New York 7, N.Y.—45
Precise Dev. Co., 1621 N. Wolcott St., Chicago 22, Ill.—23
Precise Electronics Co., 614 W. 49th St., New York 19, N.Y. CE—Chas. A. Sicuranza—17, 18, 63, 77
Precision Co., Irvington, N.J.—45
Precision Apparatus Corp., 92-27 Horace Harding Blvd., Elmhurst, L.I., N.Y. CE—Gerald Goldberger—31, 46, 52, 75
Precision Equip. Co., 32 N. State St., Chicago 2, Ill. CE—E. L. Strehlow—25
Precision Fabricators Inc., Champeney Terrace, Rochester 5, N.Y.—38, 51
Precision Instrument Mfg. Co., Inc., 57-02 Hoffman Dr., Elmhurst, L.I., N.Y.—23
Precision Machine Wks. Inc., 14 S. 9th St., Minneapolis 2, Minn.—44
Precision Paper Tube Co., 2035 W. Charleston St., Chicago 47, Ill. CE—W. F. Stahl—38
Precision Piezo Service, 427 Asia St., Baton Rouge, La.—23
Precision Prods. Co., 26 Bedford St., Waltham 54, Mass.—35
Precision Resistor Co., 334 Badger Ave., Newark 8, N.J.—70
Precision Specialties, 210 N. Western Ave., Los Angeles 4, Calif. CE—Z Goodman—22, 35, 70
Precision Tube Co., 3824 Terrace St., Philadelphia 28, Pa., CE—Chas. T. Flachbarth—12, 84
Preis Engraving Machine Co., 155 Summit St., Newark 4, N.J. CE—J. A. Hoffmann—43
Albert Preisman c/o Management Training Associates, 3308 14th St. N.W., Washington 10, D.C.—20
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Premax Products, 4136 Highland Ave., Niagara Falls, N.Y. Mgr—G. O. Benson—4, 5
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Premier Crystal Labs., 51 Park Row, New York 7, N.Y. CE—H. M. Bach—15, 23, 51
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Premier Metal Etching Co., 21-03 44th Ave., L.I.C. 1, N.Y. CE—C. J. Kuhlman—35, 54
Prentice-Hall Inc., 70 5th Ave., New York 11, N.Y.—9
Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y. CE—S. A. Barone—1, 10, 14, 18, 29, 52, 59, 63, 78
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Prest-O-Lite Battery Co., 4500 W. 16th St., Indianapolis 44, Ind.—7
Presto Electric Co., 4511 New York Ave., Union City, N.J.—73, 77
Presto Recording Corp., 242 W. 55th St., New York 19, N.Y. CE—Geo. J. Saliba—2, 6, 11, 20, 28, 65
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Detroit Harvester Co., Prestole Div., 4500 Detroit Ave., Toledo 12, Ohio CE—N. Fender—35
Price Electric Corp., E. 2nd at E. Church, Frederick, Md., CE—C. Frank Miller—68, 73
Printloid Inc., 93 Mercer St., New York 12, N.Y. CE—G. Margolish—15, 17, 18, 23, 35, 38, 57
Priscilla Braid Co., 1461 High St., Central Falls, R.I.—38
Production Eng. Corp., 666 Van Houten Ave., Clifton, N.J. CE—F. Von Hirsch—43
Production Instrument Co., 710 W.—Jackson St., Chicago 6, N.Y.—27
Progressive Mfg. Co., 50 Norwood St., Torrington, Conn. CE—R. H. Perry—35
Progressive Welder Co., 3050 E. Outer Dr., Detroit 12, Mich.—43
Protectoseal Co., 1948 S. Western Ave., Chicago 8, Ill.—38, 41, 83
Public Utility Eng. & Service Corp., 231 S. LaSalle St., Chicago 4, Ill.—20
Pure Carbon Co., St. Marys, Pa.—45
Pyramid Prods. Co., 2224 S. State St., Chicago 16, Ill.—43
Pyro Plastic Co., 526 North Ave. E., Westfield, N.J. CE—Arthur Krebs—51
Pyroferric Co., 175 Varick St., New York 14, N.Y. CE—A. Rubin—22
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Quadriga Mfg. Co., Inc., 213 W. Grand Ave., Chicago 10, Ill.—42
Quaker City Gears Co., 1910 N. Front St., Philadelphia 22, Pa.—35, 43

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Quality Electric Co., Ltd., 1235 E. Olympic Blvd., Los Angeles 21, Calif. CE—C. E. Adams—25

Quality Hardware & Machine Corp., 5849 Ravenswood, Chicago 26, Ill. CE—R. Lindgren—35

Quam-Nichols Co., 526 E. 33 Place, Chicago 16, Ill.—42

Quartz Lab. Inc., 1513 Oak St., Kansas City, Mo.—23

Quartz Prods. Co. of N.Y., 304 E. 45 St., New York 17, N.Y.—23

R-B-M Mfg. Co., Div. of Essex Wire Corp., 200 Hanna St., Logansport, Ind. CE—H. H. Clayton—68, 73, 82

R.C.A. Communications, Inc., 66 Broad St., New York 4, N.Y.—10

RCA Institutes, Inc., 75 Varick St., New York 13, N.Y.—Asst. Supt. George F. Maedel—74

RCA International Div., 745 Fifth Ave., New York 22, N.Y. CE—E. A. Laport—1, 2, 3-5, 10, 13, 23, 29, 36, 47, 52, 53, 55, 60, 62, 63, 65, 68, 75, 76, 78, 80

Radio Corp. of America, RCA Labs., 711 Fifth Ave., New York 22, N.Y.—20

Radio Corp. of America, RCA Tube Dept., Harrison, N.J. CE—Dr. G. R. Shaw—80

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Radio Corp. of America, Engineering Products Dept., Camden, N.J. CE—M. C. Batsel—1-5, 10-13, 23, 27-29, 31, 36, 42, 46-48, 52-55, 61, 63, 65, 67, 69, 71, 75, 77, 78, 82

R. E. C. Mfg. Co., 1250 Highland St., Holliston, Mass.—23, 40

R. E. L. Sales Equipment, Inc., 612 N. Michigan Blvd., Chicago 11, Ill.—25

R & R Plastics, Springfield, Mass.—51

RTS Electronics, Ltd., King St., Exeter, Devon, England CE—A. H. Simons—2, 16-18, 24, 46, 52, 53, 63, 75, 77

R-9 Crystal Co., Inc., 909 Penn Ave., Pittsburgh 12, Pa.—23

Racon Electric Co., Inc., 52 E. 19th St., New York 3, N.Y. CE—A. I. Abrahams—42

Radar Engineers, 4004 Arcade Bldg., Seattle 1, Wash. CE—W. L. Flock, W. T. Harrel—20, 24, 62

Radell Corp., 6327 Guilford Ave., Indianapolis 5, Ind.—23

Radex Corp., 53 West Jackson Blvd., Chicago 4, Ill.—14

Radiad Service, 720 Schubert Ave., Chicago 14, Ill. CE—Carl Gerlach—11, 16, 24, 54, 65

The Radiart Corp., Div. of Maguire, Ind., 3571 W. 62nd St., Cleveland 2, Ohio—4, 81

Radio City Products Co., Inc., 127 W. 26th St., New York 1, N.Y. CE—Fred Harmon—46, 75

Radio Condenser Co., Davis St. & Copewood Ave., Camden, N.J. CE—J. S. Robb—14

Radio Craft, 25 W. Broadway, New York 7, N.Y.—9

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Radio Craftsman, Inc., 1341 S. Michigan Ave., Chicago 5, Ill. CE—Edward E. Schultz, Jr.—2, 16-18, 35, 63

Radio Dealers Supply Co., 135 Liberty St., New York 6, N.Y.—25

Radio Design Co., 1353 Sterling Place, Brooklyn 13, N.Y.—46, 75

Radio Development Labs., 362 Atlantic Ave., Brooklyn 2, N.Y. CE—Robert Z. Gold—2, 24, 27, 36, 52, 59, 69, 75

Radio Development & Research Corp., 26 Cornelison Ave., Jersey City 4, N.J. CE—Robert Dorr—1, 2, 10, 16-18, 24, 28, 30, 42, 52, 63, 65, 67, 69, 73, 77, 78

Radio Electronic Co., 119 Villanova Drive, Oakland 11, Calif. CE—C. E. Downey—2, 24

Radio Engineering Labs., 35-54 36th St., Long Island City 1, N.Y. CE—Frank A. Gunther—1, 2, 4, 5, 10, 21, 24, 48, 63, 78

Radio Engineering Service Co., 1 Allegheny Ave., Baltimore 4, Md. CE—Albert E. Hayes, Jr.—20

Radio Essentials, Inc., 110 E. 3rd St., Mt. Vernon, N.Y. CE—H. H. Smith—35

Radio Frequency Labs., Inc., Boonton, N.J. CE—L. R. Damon—75

Radio Gramophone Devp. Co., Ltd., Pale Meadow Works, Bridgnorth, Shropshire, England CE—W. R. Parkinson—4, 12, 27, 36, 52, 63, 65

Radio Incorporated, 1000 S. Main, Tulsa 3, Okla.—25

Radio Industries, Inc., 2435 Irving Park Road, Chicago 18, Ill. CE—John J. Antalek—18, 55, 77

Radio Intelligence Co., Ft. Lewis, Wash.—10

Radio Inventions, Inc., 155 Perry St., New York 14, N.Y. CE—R. C. Curtis—29

Radio Labs., Inc., 2701 California Ave., Seattle 6, Wash.—1, 63, 78

Radio, Ltd., Auckland, New Zealand—9

Radio Magazines, Inc., 342 Madison Ave., New York 17, N.Y.—9

Radio Manufacturers Association, 1317 "F" St. N.W., Washington, D.C.—74

Radio Mfg. Engineers, Inc., 302 First Ave., Peoria 6, Ill. CE—R. M. Planck—1, 21, 63, 69

Radio Navigational Instrument Corp., 305 E. 63rd St., New York 21, N.Y. CE—E. J. Simon—1, 63

Radio News, 185 N. Wabash Ave., Chicago 1, Ill.—9

Radio Parts, 612 W. Randolph St., Chicago 6, Ill.—25

Radio Parts, Inc., 807 Howard Ave., New Orleans 13, La. CE—Irvine J. Levi—25

Radio Patents Corp., 10 E. 40th St., New York 16, N.Y. CE—W. G. H. Finch—29

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y. CE—Everett D. Gibbs—1-4, 24, 36, 59, 63, 67, 78, 79

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Radio Recorders, 7000 Santa Monica, Hollywood 38, Calif.—65, 66

Radio Service Co., 346 S. Main St., Wilkes-Barre, Pa.—25

Radio Service Engineers, 110 W. Packard Ave., Fort Wayne 6, Ind.—75

Radio Service Lab., Hartford, Conn.—20, 25

Radio Shack Corp., 167 Washington St., Boston 8, Mass.—4

Radio Speakers, Inc., 221 E. Cullerton Ave., Chicago 16, Ill. CE—George S. Holly—42

Radio Specialties Co., 20th & Figueroa Sts., Los Angeles 7, Calif. CE—T. L. Nelson—2, 25, 35

Radio Specialty Mfg. Co., 2023 S.E. 6th, Portland 14, Ore. CE—Gale B. Sells—23, 32, 63, 78

Radio Supply & Eng. Co., Inc., 127 Selden Ave., Detroit 1, Mich. CE—N. Hooser—25

Radio Supply Stores, Ltd., Calcutta, India—25

Radio & Technical Pub. Co., 45 Astor Place, New York 3, N.Y.—9

Radio Television Institute, Inc., 480 Lexington Ave., New York 17, N.Y. CE—L. P. Paradise—59, 74, 82

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Radio Television Supply Co., 1509 S. Figueroa, Los Angeles 15, Calif.—25

Radio Transceiver Labs., Inc., 8627 115th St., Richmond Hill 19, N.Y.—63, 78

Radio Warehouse Market, 362 Wooster Ave., Akron, Ohio—25

Radio Wire Television, Inc., 100 Sixth Ave., New York 13, N.Y.—25

Radiolab, Ltd., London, England—25

Radiomarine Corp. of America, 75 Varick St., New York 13, N.Y.—10, 63, 78

Radionic Controls Co., 3758 Belmont Ave., Chicago 18, Ill.—17, 77, 82

Radionic Engineering Co., 5757 Cass Ave., Detroit 2, Mich. CE—J. M. Rathsburg—20

Radionic Equipment Co., 170 Nassau St., New York 7, N.Y. CE—Thomas Millspaugh—25

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Radionic Research Labs., 5035 N. Winchester, Chicago 40, Ill.—20

Radionic Transformer Co., 411 S. Sangamon St., Chicago 7, Ill. CE—M. Bromberg—17, 77

Radiotone, Inc., 7356 Melrose Ave., Hollywood 46, Calif. CE—Donald B. Robinett—2, 65

Radolek Co., 610 W. Randolph St., Chicago 6, Ill.—25

Rahm Instruments, Inc., 12 West Broadway, New York 7, N.Y.—24

The Rajah Co., 53 Locust Ave., Bloomfield, N.J.—22, 35

Ramm's Radio Lab., 218 S. Bronough St., Tallahassee, Fla.—25

Rangertone, Inc., 73 Winthrop St., Newark 4, N.J.—65

Rapid Electroplating Process, Inc., 1414 S. Wabash Ave., Chicago 5, Ill.—43

Rapid Specialties Co., 325 W. Huron St., Chicago 10, Ill.—35

Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.—46, 75

The Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill. CE—J. J. O'Callaghan—2, 47, 80

Rawlplug Co., 98 Lafayette St., New York 13, N.Y.—35

Rawson Electrical Inst. Co., 118 Potter St., Cambridge 42, Mass. CE—A. J. Lush—46, 75

Ray Energy Radio & Television Corp. of America, 32 W. 22nd St., New York 10, N.Y. CE—Bernard Myers—63

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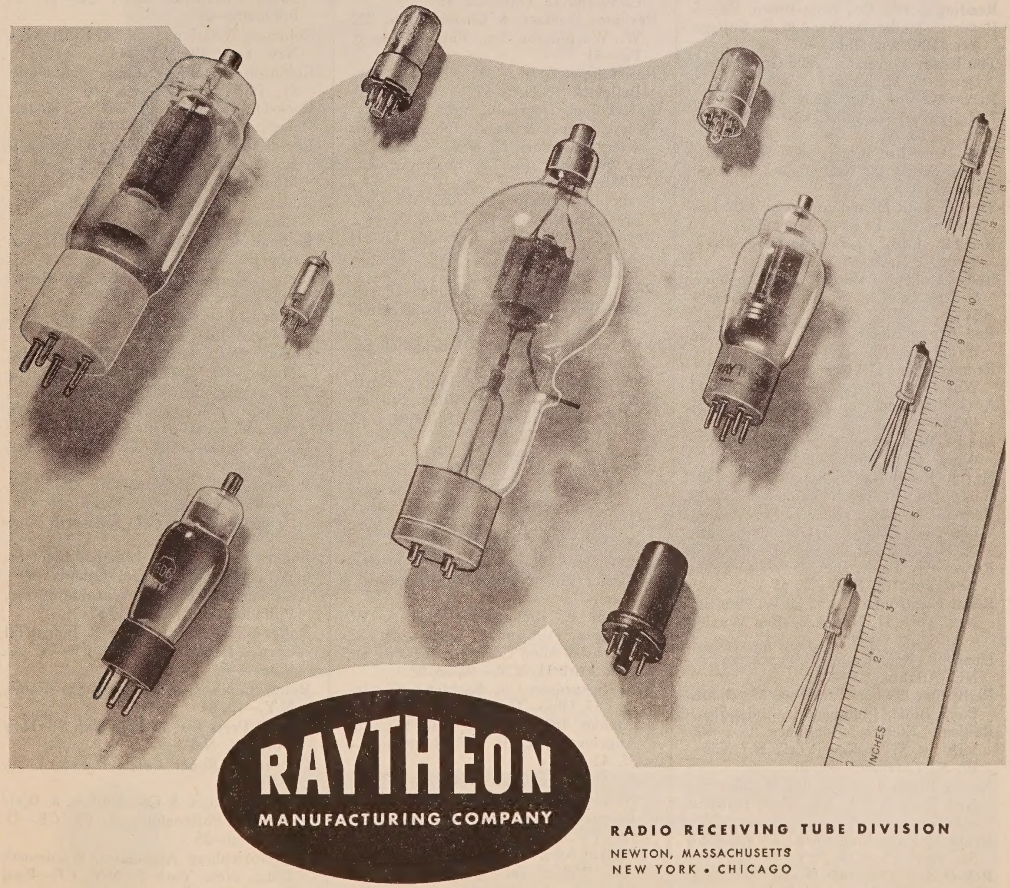

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Raymond Engineering Lab., Inc., 9 Hudson St., Berlin, Conn. CE—H. H. Raymond—20, 35, 43

Raymond Mfg. Co., Div. of Associated Spring Corp., Corry, Pa.—35

Ray-O-Vac Co., 2317 Winnebago St., Madison 4, Wisconsin—7

Raytheon Mfg. Co., Radio Receiving Tube Div., 445 Lake Shore Drive, Chicago 11, Ill.—80
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Raytheon Mfg. Co., Broadcast Equipment Div., 7517 N. Clark St., Chicago 26, Ill. CE—Stanley S. Jones—2, 5, 10, 78

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass. CE—P. T. Weeks—1, 4, 10, 17, 21, 24, 27, 29, 36, 48, 50, 59, 62-64, 67, 78, 80, 82
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Joseph Razek, 202 Darby Rd., Llanerch, Pa.—20

Rea Magnet Wire Co., Inc., 3600 E. Pontiac St., Fort Wayne 4, Ind. CE—Edward Snyder—84

Reading Batteries, Inc., Reading, Pa.—7

Reading Screw Co., Norristown, Pa.—5

Readrite Meter Works, 136 E. College Ave., Bluffton, Ohio—46

The Ready Power Co., 3826 Grand Ave., Detroit 6, Mich.—59

Record-O-Vox, Inc., 721 N. Martel Ave., Hollywood 46, Calif. CE—S. Solat—21, 55, 63, 65

The Recordisc Corp., 395 Broadway, New York 13, N.Y. CE—Sidney S. Gould—65

The Recordit Distributing Co., 3028 Locust St., St. Louis 3, Mo.—65

Recoton Corp., 212 Fifth Ave., New York 10, N.Y.—65

Recto Molded Products, Inc., Appleton & B. & O. R.R., Cincinnati 9, Ohio—51

Red Arrow Electric Corp., 100 Coit St., Irvington, N.J.—17, 77

Redmer Air Devices Corp., 601 W. Washington Blvd., Chicago 6, Ill.—43

A. G. Redmond Co., Owosso, Mich.—21, 49, 50

Reed & Prince Mfg. Co., 1 Duncan Ave., Worcester 3, Mass.—35

Harry Reed Radio Supply Co., 1124 Boonville St., Springfield, Mo.—25

Reeves-Ely Labs., Inc., Reeves Sound Labs. Div., 213 E. 91st St., New York 26, N.Y. CE—H. D. Belock—27, 65

Reeves-Ely Labs., Inc., 25 W. 43rd St., New York 18, N.Y.—27, 65

Regal Electronics Corp., 20 W. 20th St., New York 11, N.Y. CE—Ben Waxler—2, 63

Henry L. Reid Co., 1103 Peachtree St., NE, Atlanta, Ga.—25

Reilly Tar & Chemical Corp., Merchants Bank Bldg., Indianapolis, Ind.—51

Reimers Electric Appliance Co., 596 56th St., West New York, N.J. CE—W. K. Tavender—68, 70

Reiner Electronics Co., 152 W. 25th St., New York 1, N.Y. CE—Fred Horman—31, 75

Reinhold Publishing Corp., 330 W. 42nd St., New York 18, N.Y.—9

Rek-O-Kut Co., 146 Grand St., New York 13, N.Y. CE—H. Dengler—65
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Reliable Spring & Wire Forms Co., 3167 Fulton Road, Cleveland 4, Ohio—35

Reliance Automatic Lighting Co., 1927 Mead St., Racine, Wis. CE—D. F. Flegel—68, 73

Reliance Devices Co., Inc., 30 Irving Place, New York 3, N.Y.—26

Reliance Electric & Engineering Co., 1084 Ivanhoe Road, Cleveland 10, Ohio—21, 49

Reliance Instrument Co., 714 N. Kedzie Ave., Chicago 12, Ill.—46

Remco Products, Inc., 33 W. 60th St., New York 23, N.Y. CE—Wm. W. Roberts—20, 24, 69, 80

Remde Engineering Co., 7813 W. Rosedale Ave., Chicago 31, Ill. CE—Jack Remde—27, 75

Remington-Rand Inc., Electronic Div., Johnson & N. Main Sts., Middletown, Conn. CE—James J. Lamb—1, 78, 80

Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif. CE—H. A. Greene, Jr.—2, 40, 47, 51, 58, 63, 72

Republic Industries, Inc., 5042 S. Cottage Grove, Chicago 15, Ill.—77

Republic Steel Corp., Republic Bldg., Cleveland 15, Ohio—22, 45

Resinous Products & Chemical Co., 222 W. Washington Sq., Philadelphia 6, Pa.—51

Resistoflex Corp., 39 Plansoen St., Belleville 9, N.J.—57

Revco, Inc., Deerfield, Mich.—43

Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N.Y.—45, 84

Rex Rheostat Co., 3 Foxhurst Rd., Baldwin, N.Y.—70

Reynolds Electric Co., 2650 W. Congress St., Chicago 12, Ill.—40, 50, 68

Reynolds Metals Co., Reynolds Metals Bldg., Richmond 19, Va. CE—D. Blackwelder—45

Reynolds Spring Co., Moulded Plastic Div., 955 Water St., Jackson, Mich.—35, 51, 57

J. Thomas Rhamstine, 301 Beaubien St., Detroit 26, Mich.—46

Rhein Engineering, 120 West North St., Parkside Industries Bldg., Springfield, Ohio CE—G. W. Rhein—1, 2, 20, 24, 27, 46, 52, 63, 75, 78

Rhode Island Insulated Wire Co., 50 Burnham Ave., Providence, R.I.—84

M. H. Rhodes, Inc., 30 Bartholomew Ave., Hartford, Conn.—68, 73

Bernard Rice's Sons, Inc., 325 5th Ave., New York 16, N.Y.—4, 43

Arklay S. Richards Co., Inc., 83 Winchester St., Newton Highlands 61, Mass.—75

William E. Richardson, 5960 S. W. Brugger, Portland 1, Oregon—20

Richardson-Allen Corp., 15 W. 20th St., New York 11, N.Y.—68, 73, 82

The Richardson Co., Lockland, Cincinnati 15, Ohio—11, 51, 54, 57

Richmont Inc., 2810 E. 11th St., Los Angeles 23, Calif. CE—Livermont—35, 43

John F. Rider Labs., 404 Fourth Ave., New York 16, N.Y. CE—Robert Lorenzen—2, 20, 52, 53, 59, 75

John F. Rider Publisher, Inc., 404 Fourth Ave., New York 16, N.Y.—9

Frank Rieber, Inc., 11916 West Pico Blvd., Los Angeles 34, Calif. CE—Richard G. Leitner—2, 47, 75

Riegel Paper Corp., 342 Madison Ave., New York 17, N.Y.—38

Riggs & Jeffreys, Inc., 73 Winthrop St., Newark 4, N.J.—25

Rinauld Optical Co., Webster, Mass.—23

Ring & Clark, 102 Munsey Bldg., Washington 4, D.C.—20

The Ripley Co., 65 New Litchfield St., Torrington, Conn. CE—John M. Miller, Jr.—1, 2, 8, 20, 24, 27, 42, 53, 55, 62, 63

A. E. Rittenhouse Co., Honeoye Falls, N.Y.—17, 77

Ritter Radio Service Co., Dayton, Ohio—25

Riverbank Labs., Geneva, Ill.—75

Riverside Metal Co., Keystone Bridge, Riverside, N.J.—45

Robbins & Myers, 1345 Lagonda Ave., Springfield, Ohio—21, 49

Robertson Chemical Co., 9808 Meech Ave., Cleveland 5, Ohio—38, 41

Robertson Mfg. Co., Trenton 5, N.J.—43

W. C. Robinette Co., 802 Fairoaks, South Pasadena, Calif. CE—W. C. Robinette—27

Robinson Aviation, Inc., 730 Fifth Ave., New York 19, N.Y.—43

Robinson Recording Labs., 355 Ninth St., Philadelphia 7, Pa.—66

Rock-Ola Mfg. Corp., 867 N. Kedzie Ave.. Chicago 51, Ill.—64

Rockbestos Products Corp., 50 Mitchell Road, New Haven 4, Conn. CE—H. S. Moore—84

Rodale Mfg. Co., 6th & Minor Sts., Emaus, Pa.—72

Rodman & Co., 1827 S. Hope St., Los Angeles 15, Calif.—25

John A. Roebling's Sons Co., 640 Broad St., Trenton 2, N.J.—12, 84

Rogan Brothers, 2003 S. Michigan Ave., Chicago 16, Ill.—51

Rogers Corp., Mill & Oakland Sts., Manchester, Conn.—5, 13, 38, 57

Rogers Majestic Ltd., 622 Fleet St. W., Toronto, Canada CE—J. R. Warren—29, 36, 63, 80

Rogers Paper Mfg. Co., Manchester, Conn.—38

Rogers Radio Broadcasting Co., Ltd., 37 Bloor Street W., Toronto 5, Ontario, Canada CE—J. Ellsworth Rogers—10, 66

Rogers Radio Tubes, Ltd., 622 Fleet St. W., Toronto, Ontario, Canada—80

Rohm & Haas Co., W. Washington Sq., Philadelphia 6, Pa.—51, 57

Roller-Smith Div., Realty & Industrial Corp., Bethlehem, Pa. CE—A. C. Bates—46

Rome Cable Corp., Ridge St., Rome, N.Y.—12, 84

Ronald Press Co., 15 East 26th St., New York 10, N.Y.—9

George D. Roper Corp., Rockford, Ill.—60

Raymond Rosen & Co., 32nd St. & Walnut St., Philadelphia 4, Pa. CE—D. M. Lapp—25

Paul Rosenberg Associates, Woolworth Bldg., New York 7, N.Y. CE—Paul Rosenberg—20

(Continued on page 84A)

Electronic Components by ERIE RESISTOR

ERIE RESISTOR has developed and manufactured a complete line of Ceramic Condensers for receiver and transmitter applications; Silver-Mica and Foil-Mica Button Condensers; Carbon Resistors and Suppressors. Complete technical information will be sent on request.

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ERIE RESISTOR CORP., ERIE, PA.

LONDON, ENGLAND TORONTO, CANADA.

(Continued from page 82A)

Ross Mfg. Co., 2241 S. Indiana, Chicago 16, Ill.—18, 23, 81

Rotax Mfg. Co., 24 Bathgate Place, Newark 7, N.J.—72

Albert Rothenstein, 135 Liberty St., New York 6, N.Y.—13

The T. R. Routh Co., 1045 Bryant St., San Francisco 3, Calif.—75

Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio. CE—H. N. Rowe—2, 4, 24, 42, 44, 47, 62, 65
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Rowe Radio Research Lab. Co., 2422 N. Pulaski Road, Chicago 39, Ill.—1, 2, 6, 20, 24, 27, 30, 31, 32, 46, 52, 53, 62, 63, 69, 73, 75, 78, 82

Roxalin Flexible Finishes, Inc., 800 Magnolia Ave., Elizabeth, N.J.—41, 83

Royal Electric Co., 95 Grand Ave., Pawtucket, R.I.—12

Royal Moulding Co., Inc., 69 Gordon Ave., Providence 5, R.I.—51

Royal-Tone Radio Co., 305 Throop Ave., Brooklyn 6, N.Y. CE—M. W. Aquila—63

Rubicon Co., 3751 Ridge Ave., Philadelphia 32, Pa.—46, 75

The Ruby Chemical Co., 68-70 McDowell St., Columbus 8, Ohio CE—G. G. Baker—45, 72

Ruby Electric Co., 729 7th Avenue, New York 19, N.Y.—25

The Rudolph Wurlitzer Co., Falls Blvd., North Tonawanda, N.Y.—2

Runzel Cord & Wire Co., 4723-31 Montrose Ave., Chicago 41, Ill.—12

Rupp's Assembling & Mfg. Works, 2341 N. Seminary Ave., Chicago 14, Ill. CE—Wendel Rupp—12, 43

Rusgreen Mfg. Co., 14262 Birwood, Detroit 4, Mich.—46

Russell Burdsall & Ward Bolt & Nut Co., 100 Midland Ave., Port Chester, N.Y.—35

Russell Electric Co., 340 West Huron St., Chicago 10, Ill. CE—George Clark 50, 64

Russell & Stoll Co., 125 Barclay St., New York 7, N.Y.—35

St. John X-Ray Service Co., 30-20 Thomson Ave., L.I.C., N.Y.—80

St. Joseph Lead Co. of Pa., Drawer 97, Monaca 7, Pa.—45

St. Louis Microphone Co., Box 3440, Maplewood 17, Mo. CE—R. H. Mayer—47
See our advertisement page 154-A

St. Louis Screw & Bolt Co., 6900 N. B'way, St. Louis 15, Mo. CE—J. B. Schuck—35

St. Marys Carbon Co., St. Marys, Pa.—45

St. Regis Paper Co., 230 Park Ave., New York 17, N.Y.—51

S/C Labs. Inc., 20-22 Van Wagenen St., Newark 4, N.J. CE—Herbert Schor—4, 20, 24, 63, 78

S. Corrugated Quenched Gap Co., 1917 N. Springfield, Chicago 47, Ill.—36

SKF Industries Inc., Front & Erie Aves. Phila. 40, Pa.—35

SOS Cinema Supply Corp., 449 W. 42nd St., New York 18, N.Y.—25

S.W. Inductor Co., 1056 N. Wood St., Chicago 22, Ill. CE—Alfred J. Koenig—4, 17, 18, 24, 30, 36, 37, 52, 77

Sal-Mar Labs., Inc., 76 Coit St., Irvington 11, N.J. CE—Chas. Penk—67

Salford Electrical Instruments Ltd., Salford, England—46

Sanborn Co., 39 Osborn St., Cambridge 39, Mass.—24, 79

Sandee Mfg. Co., 3945 N. Western, Chicago 18, Ill.—43, 51

Sanders Bros. Mfg. Co., 409 W. Main St., Ottawa, Ill.—11, 54, 61

Sandman Electric Motor Co., 164 Oliver St., Boston 10, Mass.—18

Sangamo Electric Co., 1301 N. 11th St., Springfield, Ill.—13, 15

Santay Corp., 351-359 N. Crawford Ave., Chicago 24, Ill. CE—Frank Eskuchen—11, 16, 43, 51

E. H. Sargent Co., 155 E. Superior St., Chicago 11, Ill.—25

E. M. Sargent Co., 212 9th St., Oakland 6, Calif. CE—L. C. Ragment—1, 63

Sauereisen Cements Co., Sharpsburg Station, Pittsburgh 15, Pa. CE—C. Fred Sauereisen—15, 36, 51, 83

Saville RaTeleNics Labs., 503 W. Main St., Blanchester, Ohio CE—Homer F. Saville—25

Saxl Instrument Co., 6 Linnaean St., Cambridge 38, Mass. Pres.—Dr. E. J. Saxl—25

Saxonburg Potteries, Saxonburg, Pa.—15, 38

Schaar & Co., 754 W. Lexington St., Chicago 7, Ill.—24

Schaefer Bros. Co., 1059 W. 11th St., Chicago 7, Ill.—70

Schauer Machine Co., 2060 Reading Rd., Cincinnati 2, Ohio CE—G. L. Nord—67

Schloss Bros. Corp. 801 E. 135th St., Bronx 54, N.Y.—11

Louis J. Schnell, Box 56, Santa Barbara, Calif.—20

Wm. Schollhorn Co., 414 Chapel St., New Haven, Conn.—43

Schoonmaker Insulation Co., 635 Greenwich St., New York 14, N.Y.—38

W. L. Schott Co., 9306 Santa Monica Blvd., Beverly Hills, Calif. CE—W. L. Schott—24, 33, 35, 38, 39, 41, 58, 61, 81

Schulmerich Electronics, Inc., 220-228 N. Main St., Sellersville, Pa. CE—J. G. Kunz—2, 25

Schuttig & Co., 9th & Kearny St., Washington 17, D.C. CE—Woodworth S. Williams—1, 2, 4, 20, 24, 63

Schweitzer Paper Co., 182 Cornelison Ave., Jersey City, N.J. SM—Peter Schweitzer—38
See our advertisement page 143-A

Sciaky Bros., 4915 W. 67th St., Chicago 38, Ill. CE—Mario Sciaky; D. Sciaky 43

Scientific Industries, 5320 N. B'way, Chicago 40, Ill.—68

Scientific Radio Prods. Co., 738½ W. B'way, Council Bluffs, Iowa CE—E. M. Shideler—23

Scientific Dev. Corp., 614 W. 49th St., New York 19, N.Y.—12, 63, 84

Scientific Radio Service, 4301 Sheridan St., University Park, Hyattsville, Md. CE—H. D. Eisenhauer—23

Scophony Corp. of America, 527 5th Ave., New York 17, N.Y.—80

E. H. Scott Radio Labs., Inc., 4450 Ravenswood Ave., Chicago 40, Ill. CE—Art Finnie—63

Scovill Mfg. Co. Electronic Div., 99 Mill St., Waterbury 91, Conn.—1, 13, 27, 39, 45, 58, 61, 64

Scranton Record Co. Res. Lab., 100 W. Poplar St., Scranton 9, Pa. CE—Dr. Otto J. M. Smith—65

Screenmakers, 64 Fulton St., New York 7, N.Y. CE—Sam Brooks—35

Scully Machine Co., 62 Walter St., Bridgeport 8, Conn.—65

Seager Carbon Co., 68 Barclay St., New York 7, N.Y.—45

Sealol Corp., 41 Willard Ave., Providence 5, R.I.—41

Searle Aero Industries, Inc., Box 111, Orange, Calif. CE—Marshall O. Searle—1, 2, 12, 16, 24, 36, 56, 59, 61, 63, 78

Stuart L. Seaton, College, Alaska—20

Security Locknut & Lockwasher Inc., Indianapolis, Ind.—35

Security Steel Equip. Co., Avenel, N.J.—11

J. P. Seeburg Corp., 1500-24 N. Dayton, Chicago 22, Ill. CE—M. W. Kenney—64

Seely Instrument Co., Inc., 2249 14th St. S.W., Akron 14, Ohio—27, 68

H. P. Segel Co., 321 Columbus Ave., Boston 16, Mass.—25

Seismograph Service Corp., Kennedy Bldg., Box 1590, Tulsa 3, Okla.—24

Select-O-Phone Co., 1012 Eddy St., Providence 5, R.I.—2

Selectar Mfg. Co., 21-10 49th Ave., L.I.C. 1, N.Y. CE—John T. Powers—4, 19, 47

Selenium Corp. of America, 1719 W. Pico Blvd., Los Angeles 15, Calif. CE—Eric Lidow—27, 67
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Self Winding Clock Co., 205 Willoughby Ave., B'klyn 5, N.Y.—27

Sellers Co., 912 Commerce, Dallas 2, Tex.—66

H.&A. Selmer Inc., Elkhart, Ind.—65

Senn Corp., New Augusta, Ind.—75

Sensitive Res. Inst. Co., 9 Elm Ave., Mt. Vernon, N.Y.—46, 75

Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill. CE—W. J. Schnell—55, 63

Sentry Crystal Co., 206 SW Washington St., Portland 4, Ore. CE—Frank H. Fay—23

Serdex Inc., 91 Cambridge St., Boston, Mass.—4

Setchell-Carlson, Inc., 2233 University Ave., St. Paul 4, Minn. CE—B. T. Setchell—63

Seth Thomas Clock Div., Gen'l Time Instruments Corp., Thomaston, Conn.—43

Seymour Mfg. Co., 47 Franklin St., Seymour, Conn.—45

Shakeproof Inc, 2501 N. Keeler Ave., Chicago 39, Ill. CE—W. M. Hanneman—35

Shallcross Mfg. Co., Jackson Ave. & Pusey Ave., Box 325, Collingdale, Pa. CE—F. D. V. Mitchell—46, 70, 73, 75

Sharon Herald B'casting Co. (WPIC), Box 541, Sharon, Pa. CE—A. C. Heck—10

Shaw Insulator Co., 160 Coit St., Irvington 11, N.J. CE—J. H. DuBois—11, 51

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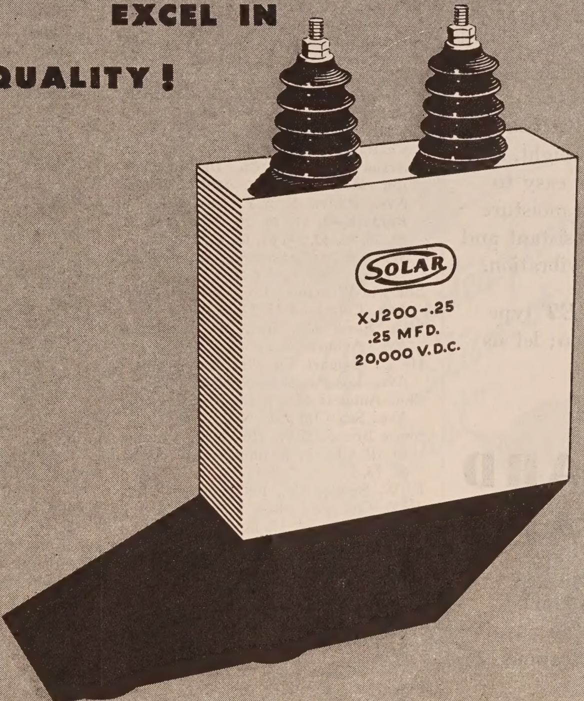
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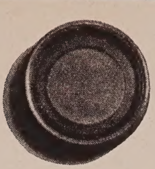

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Shawinigan Prods. Corp., 350 5th Ave., New York 1, N.Y.—51
Sheldon Elec. Co., 76 Coit St., Irvington 11, N.J.—59, 67
F. H. Shepard, Jr., 31 Union Place, Summit, N.J.—20
Sheridan Electronics Corp., 2850 S. Michigan Ave., Chicago 16, Ill. CE—K. W. Jarvis—42
Sherman Clay & Co., San Jose, Calif.—25
Sherman Industrial Electronic Co., 503 Washington Ave., Belleville 9, N.J. CE—Nathan Carver—20, 24, 32, 36
H. B. Sherman Mfg. Co., 22 Barney St., Battle Creek, Mich.—19, 35
Sherman & Reilly Inc., 1st & Broad, Chattanooga 2, Tenn.—84
Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., B'klyn 6, N.Y. CE—Miles V. Barasch—2, 11, 16, 20, 24, 27, 29, 31, 32, 36, 48, 52, 54, 61, 63, 69, 75, 78
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Sherwin-Williams Co., 101 Prospect Ave,. Cleveland 15, Ohio—38, 41, 83
Shoe Form Co., Inc., 26-30 Aurelius Ave., Auburn, N.Y.—43
H. E. Shugart Co., 911 N. Sycamore Ave., Los Angeles 38, Calif.—20
Shur-Antenna-Mount Inc., 272 Sea Cliff Ave., Sea Cliff L.I., N.Y.—5
Shure Bros., 225 W. Huron St., Chicago 10, Ill. CE—B. B. Bauer—2, 47, 55, 63, 65, 73, 77
F. W. Sickles Co., 165 Front St., Box 330, Chicopee, Mass. CE—Howard J. Benner—13, 14, 17, 18, 77
John Sidebotham Inc. 4317 Griscom St., Philadelphia 24, Pa.—38
Philip Sievering Inc., 199 Lafayette St., New York 12, N.Y.—43
Sigma Instruments Inc., 70 Ceylon St. Boston 21, Mass. CE—R. T. Fisher—68
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Signal Electric Mfg. Co., 1939 Troam St., Menominee, Mich. CE—Phil Garner—50
Signal Electronic & Mfg. Co., 439 Lafayette St., New York 3, N.Y.—75
Signal Eng. & Mfg. Co., 154 W. 14th St., New York 11, N.Y.—68
Signal Indicator Corp., 900 B'way, New York 3, N.Y.—56
Silk Screen Supplies Inc., 33 Lafayette Ave., B'klyn 17, N.Y.—35
Sillcocks-Miller Co., 10 W. Parker Ave., Maplewood, N.J.—51
Sillcox Radio & Telev. Corp., 70 Pine St., New York 5, N.Y.—64
Silman Mfg. Corp., 305 Pennsylvania Ave., Pittsburgh 10, Pa.—25
Silver City Crystal Co., 468 Center St., Meriden, Conn.—23
Simmonds Aerocessories Inc., 30 Rockefeller Pl., New York 20, N.Y. CE—W. J. Morrison—24
Simmons Fastener Co., 1750 N. B'way, Albany 1, N.Y.—43
Simonds Saw & Steel Co., Ohio St., Lockport, N.Y.—44, 45
Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass. CE—E. W. Davis—12, 84
Simpson Electric Co., 5216 W. Kinzie St., Chicago 44, Ill.—46, 75
Mark Simpson Mfg. Co., 186-194 W. 4th St., New York 14, N.Y. CE—G. Leonard Werner—2, 42, 55
Ed Singer & Assoc. Inc., 1722 W. Arcade Pl., Chicago 12, Ill. CE—J. N. Golten—45, 47, 50, 55
Sinko Tool & Mfg. Co., 10 Parker Ave. W., West Orange, N.J.—51
Sirian Wire & Contact Co., 260 Sherman Ave., Newark 5, N.J.—45
Skaggs Transformer Co., 5894 B'way, Los Angeles 3, Calif.—77, 82
Hector R. Skifter, St. Paul Hotel, St. Paul, Minn.—20
C. R. Skinner Mfg. Co., 294 Turk St., San Francisco 2, Calif. CE—C. R. Skinner—2, 12, 52, 53, 66
Skydyne Inc., River Rd., Port Jervis, N.Y.—11
Skyway Precision Tool Co., 3217 Casitas Ave., Los Angeles 26, Calif.—43
N. G. Slater Corp., 3 W. 29th St., New York 1, N.Y.—11
Slater Electric Mfg. Co., Inc., 728 Atlantic Ave., B'klyn 17, N.Y.—80
Geo. E. Sleeper Co., 2608 9th St., Berkeley 2, Calif.—20, 24
Small Elec. Motors 'Canada' Ltd., Leaside, Toronto 12, Canada—50
Small Motors Inc., 1308 Elston Ave. N., Chicago 22, Ill. CE—Chas. G. Rogers—4, 12, 18, 49, 50, 62
Lynne C. Smeby, 4801 Conn. Ave., N.W., Washington 8, D.C.—20
A. H. R. Smith, Ottawa, Can.—20
F. A. Smith Mfg. Co., Box 509, Rochester 2, N.Y. CE—Vic Matulaitis—8, 50
Melvin L. Smith Labs., 16 Field St., Kane, Pa.—23
Nathan R. Smith Mfg. Co., 105 Pasadena Ave., S. Pasadena 3, Calif. CE—Nathan R. Smith—17, 44, 77
Smith-Meeker Eng. Co., 125 Barclay St., New York 7, N.Y. CE—F. B. Woodworth—2, 20, 25, 63, 78
Smith Paper Inc., 22 Eagle Ave., Lee, Mass. CE—P. A. Forni—38
Smuckler & Co., 136 Liberty St., New York 6, N.Y. CE—A. Kennedy—79
Geo. W. Snarr & Co., 110 S. 9th St., St. Louis 2, Mo.—45
Snyder Mfg. Co., 813 Noble St., Phila. 23, Pa.—4
Sola Electric Co., 2525 Clybourn Ave., Chicago 14, Ill. CE—M. A. Tennyson—77, 82
Solar Corp., 944 W. Bruce St., Milwaukee 4, Wis.—7
Solar Mfg. Corp., 285 Madison Ave., New York 17, N.Y. CE—J. I. Cornell—13, 30, 75
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Somerset Labs., 316 Valley Brook Ave., Lyndhurst, N.J. CE—Samuel A. Bokovoy—23
Sommet Corp., 550 5th Ave., New York 19, N.Y.—25
Sondyna, A. G., Hedwig Strasse 25, Zurich, Switzerland CE—Strohschneider—46, 63, 75
Sonora Radio & Telev. Corp., 325 N. Hoyne Ave., Chicago 12, Ill. CE—D. M. Fetterman—63, 64
Sonotone Corp., Saw Mill River Rd., Elmsford, N.Y.—2, 42, 44

Soreng-Manegold Co., 1901 Clybourn Ave., Chicago 14, Ill.—44

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. CE—Edward M. Sorensen—1, 2, 17, 21, 22, 27, 30, 31, 37, 44, 62, 63, 67, 69, 77, 80, 82
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Sorenz Mfg. Corp., 21-10 49th Ave., L.I.C., N.Y.—19

Sound Inc., 221 E. Cullerton St., Chicago 16, Ill. CE—A. Shoup; F. Shoup; K. M. R. Gaardar—2, 11, 20, 24, 55, 62, 63

Sound Amplification Co., 3319 N. Broad St., Phila. 40, Pa.—25

Sound Apparatus Co., 233 B'way, New York 7, N.Y. CE—A. W. Niemann—34, 46
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Sound Devices Co., 160 E. 116th St., New York 29, N.Y.—65

Sound Equipment Corp., 3903 San Fernando Rd., Glendale 7, Calif. CE—Geo. MacArthur—2, 15, 17, 24, 27, 30, 37, 44, 52, 59, 64, 65, 75, 82

Sound Service Inc., Cleveland, Ohio—66

Soundscriber Corp., 82 Audubon St., New Haven, Conn.—65

Southern Battery Co., Appomattox, Va.—7

Southern Carbon Brush Co., 109 N. 11th St., Birmingham, Ala.—45

Southern Electronics Inc., Box 2158, Greensboro, N.C.—25

Southern Mica Co., Johnson City, Tenn.—38

Southern Prods., Independence, Mo.—4

Southington Hardware Mfg. Co., Southington, Conn.—35

Sparks Mfg. Co., Ltd., 318 Jefferson St., Newark 5, N.J.—11

Spartan Tool Co., 6007 Lincoln Ave., Chicago 45, Ill.—43

Sparton of Canada, Ltd., Elm St., London, Ontario—63

Spaulding Fibre Co., 310 Wheeler St., Tonawanda, N.Y. CE—E. A. Russell—57

Speak-O-Phone Co., 23 W. 60th St., New York 23, N.Y. CE—C. A. Austin—65

Speaker Corp. of Chicago, 1725 W. North Ave., Chicago 22, Ill. CE—N. H. Burdsall—42

Special Chemicals Co., 30 Irving Pl., New York 3, N.Y. CE—Lionel Cinamon—38, 44, 72

Special Machine Tool Eng. Wks., 132 Lafayette St., New York 13, N.Y.—43

Specialized Service Co., 1434 Main, Klamath Falls, Ore.—25

Specialties Inc., Skunks Misery Rd., Syosset, L.I., N.Y. Dir. of Res.—Dr. E. S. Gwathmey—20, 27, 34, 69

Specialty Insulation Mfg. Co., Church St., Hoosick Falls, N.Y.—51

Spectrum Engineers, Inc., SE Cor. Preston & Filbert Sts., Phila. 4, Pa. CE—J. Burger—1, 2, 20, 24, 27, 36, 62, 63, 78

Speedex Mfg. Co., 530 Gough St., San Francisco 2, Calif.—40

Speedway Mfg. Co., 1834 S. 52nd Ave., Cicero 50, Ill. CE—Mac Cabe—43, 50

Speer Carbon Co., Theresia St., St. Marys, Pa. CE—H. W. Abbott—45, 80, 82

Speight Labs., 145 Wellington St., W., Toronto 1, Ont., Can.—2

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Spencer Thermostat Co., 34 Forest St., Attleboro, Mass. CE—V. G. Vaughan —27, 68

Spencer Wire Co., W. Brookfield, Mass. CE—S. C. Avallone—84

Sperry Gyroscope Co., Inc., Great Neck, N.Y. CE—C. G. Holschuh—1, 27, 46, 62, 63, 75, 78-80
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Sperry Prods. Inc., 15 & Willow Ave., Hoboken, N.J. SM—J. W. Dice—75

Sperti Inc., Norwood Station, Cincinnati 12, Ohio—27, 38, 73, 80

Sprague Electric Co., 189 Beaver St., N. Adams, Mass. CE—Preston Robinson —13, 30, 70, 84
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Spruce Pine Mica Co., Spruce Pine, N.C.—38

Square D Co., 6060 Rivard St., Detroit 11, Mich.—68, 73

Square Root Mfg. Corp., 901 Nepperhan Ave., Yonkers 3, N.Y. CE—J. J. Root—24, 27

Sta-Warm Electric Co., Ravenna, Ohio —41, 83

Stackpole Carbon Co., Tannery St., St. Marys 3, Pa. Supr. Eng.—Henry Dressel—13, 22, 45, 70, 73
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J. S. Staedtler Inc. 53-55 Worth St., New York 13, N.Y.—26

Stallman of Ithaca, 210-22 N. Tioga St., Ithaca, N.Y.—25

Stamford Electric Corp., Stamford, Conn. CE—Leo Jacobson—25, 77

Stamford Metal Specialty Co., 428 B'way, New York 13, N.Y. CE—Arnold Dauman—11, 16, 43, 54, 61

Standard Arcturus Corp., 30 Court St., Newark 2, N.J.—80

Standard Coil Prods. Co., 2329 N. Pulaski Rd., Chicago 39, Ill. CE—R. F. Zeuschner—14, 17, 18, 37, 77

Standard Electric Timer Co., 89 Logan St., Springfield, Mass.—39, 68

Standard Electrical Instrument Co., 216-18 S. Lafayette Blvd., South Bend 12, Ind.—24

Standard Electrical Prods. Co., 400 Linden Ave., Dayton 3, Ohio CE—S. M. Goffstein—68, 73, 77

Standard Instruments Corp., 568 Prospect Ave., New York 55, N.Y.—75

Standard Insulating Co., 74 Paterson Ave., E. Rutherford, N.J.—41, 83

Standard Locknut & Lockwasher Inc., 33-35 W. St. Clair St., Indianapolis 4, Ind. CE—C. A. Harnischfeger—35

Standard Machinery Co., 1475 Elmwood Ave., Providence 7, R.I.—43

Standard Molding Corp., 460 Bacon St., Dayton 1, Ohio—51

Standard Oil Co., 910 S. Michigan Ave., Chicago 5, Ill.—83

Standard Piezo Co., P.O. Box 164, Carlisle, Pa. CE—E. L. Minnich—23
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Standard Plastics, 1548 S. Robertson Blvd., Los Angeles 35, Calif.—23

Standard Pressed Steel Co., Box 596, Jenkinstown, Pa.—35

Standard Prods. Co., 505 Blvd. Bldg., Detroit 2, Mich.—51, 57

Standard Radio Engineers, 6739 Hillside Ave., Indianapolis 5, Ind.—20

Standard Tech. Devices Inc., 129 Livingston St., B'klyn 2, N.Y.—43

Standard Telephones & Cables Ltd., New Southgate, England—10

Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill., CE—H. H. Krefft—17, 59, 67, 77, 78, 82
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Standard Varnish Wks., 2600 Richmond Terrace, Staten Island, N.Y.—41, 83

Standard Winding Co., 44-62 Johnes St., Newburgh, N.Y. CE—F. A. Catanzariti—17

Standard X-Ray Co., 1930 Burling St., Chicago 14, Ill.—80

Stanley Electric Tools, New Britain, Conn.—43

Stanley Wks. Magic Door Div., 143 Lake St., New Britain, Conn.—43

Stanton Radio Supply, 521 State St., Hammond, Ind. CE—J. W. Stanton, II—24

Stanwyck Winding Co., 102 S. Lander St., Newburgh, N.Y.—17, 18

Star Electric & Eng. Co., 613 Fannin, Houston 2, Texas—25

Star Electric Motor Co., 200 Bloomfield Ave., Bloomfield, N.J.—49

Star Expansion Prods. Co., 147 Cedar St., New York 6, N.Y. CE—R. E. McIntosh—35, 43, 58, 71

Star Porcelain Co., 41 Muirhead Ave., Trenton, N.J.—15, 38

Stark's, 509 S. State St., Chicago 5, Ill. —25

Stark Electronic Insts. Ltd., 37 Hanna Ave., Toronto 1, Ont. Canada CE—Edwin Wilson—46, 52, 53, 75

Stark Sound Eng. Corp., 616 High St., Ft. Wayne 1, Ind. CE—S. O. Fountain —25

L. S. Starrett Co., 165 Crescent St., Athol, Mass. CE—A. E. Williams—26, 43

States Co., 19 New Park Ave., Hartford 6, Conn.—4, 6, 35, 70, 82

Stavid Eng. Inc., 40 Somerset St., Plainfield, N.J. CE—S. M. Shackell—20, 24
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R. L. Stedman Machine Wks., Oyster Bay, L.I., N.Y.—43

Steel City Electric Co., 1207 Columbus Ave., Pittsburgh 12, Pa.—35

Steger Furniture Mfg. Co., Steger, Ill. —11

Stephens Mfg. Co., 10416 Nat'l Blvd., Los Angeles 34, Calif.—42

Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.—35

Sterling Mfg. Co., 9205 Detroit Ave., Cleveland 2, Ohio—46, 75

Sterling Varnish Co., Haysville, Pa.—41, 83

Sterne Equip. Co., Ltd., 94 Wellington St. W., Toronto, Ont., Can.—24

Stevens-Arnold Co., 22 Elkins St., S. Boston 27, Mass.—63, 78, 79

Stevens Machinery Co., 1461 W. Grand Ave., Chicago 22, Ill.—43

Stevens Paper Mills Inc., Windsor, Conn.—38, 57

Stevens Walden Inc., 475 Shrewsbury St., Worcester, Mass.—43

D. M. Steward Mfg. Co., E. 35th St., Chattanooga 1, Tenn.—15, 38

Steward & Romaine Mfg. Co., 124 N. 6th St., Phila. 6, Pa.—35

F. W. Stewart Mfg. Corp., 4311-13 Ravenswood Ave., Chicago 13, Ill. CE —J. M. Hrouda—12, 35

Stewart Stamping Co., 630 Central Park Ave., Yonkers, N.Y.—19

Stewart-Warner Corp., 1826 Diversey Pkwy., Chicago 14, Ill. CE—Geo. W. Oehlsen, Jr.—63

H. H. Sticht & Co., 27 Park Pl., New York 7, N.Y. CE—A. H. Volker—46, 75

E. B. Stimpson Co., 74 Franklin Ave., B'klyn 5, N.Y.—35

John H. Stobbe, 63 Wall St., New York 5, N.Y.—20

Stockwell Transformer Corp., 569 S. Main St., Akron, Ohio—21, 49

Stoddart Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif. CE—R. R. Stoddart—1, 3, 46, 63, 69, 78, 79
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C. H. Stoelting Co., Ind. Div. of Universal X-Ray, 424-K N. Homan Ave., Chicago 24, Ill.—27

F. J. Stokes Machine Co., 12 S. 12th St., Phila. 7, Pa. CE—G. Stevenson—60

J. Stokes Rubber Co., Taylor & Webster Sts., Trenton 9, N.J.—51

Stow Mfg. Co., 445 State St., Binghamton, N.Y.—35

Stricker-Brunhuber Co., 19 W. 24th St., New York 10, N.Y.—43

Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, N.Y. CE—Frederic C. Young—2, 4, 12, 13, 39, 40, 42, 47, 58, 63, 65, 68, 73, 77, 84

The Strong Electric Corp., Toledo, Ohio —67

Stronghold Screw Prod., 216-222 W. Hubbard St., Chicago 10, Ill.—35

Struthers-Dunn Inc., 1326 Cherry St., Phila. 7, Pa. CE—Chas. A. Packard—68

Stupakoff Ceramic & Mfg. Co., Box 390, Latrobe, Pa. CE—R. G. Stark—15, 38, 45
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Submarine Signal Co., 40 Broad St., Boston 16, Mass. CE—Edgar Horton —1, 4, 24, 27, 34, 52, 63, 69, 77-79, 82

Sullivan Machinery Co., 929 Woodland Ave., Michigan City, Ind.—60

J. Sullivan & Sons Mfg. Co., Inc., 2224 N. 9th St., Phila. 33, Pa.—38

Summerill Tubing Co., Bridgeport, Montgomery County, Pa.—45

Summit Radio Corp. (WAKR), Akron, Ohio—10

Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.—46

Sun Radio & Electronics Co., Inc., 122-124 Duane St., New York 7, N.Y.—25
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Super Electric Prods. Corp., 1057 Summit Ave., Jersey City 7, N.J. CE—F. K. Coppell—4, 17, 18, 30, 44, 73, 77

Superior Carbon Prods. Inc., 1997 George Ave., Cleveland 5, Ohio—45

Superior Electric Co., 83 Laurel St., Bristol, Conn. CE—W. P. Carpenter —27, 59, 77, 82

Superior Flake Graphite Co., 33 S. Clark, Chicago 3, Ill.—45

Superior Instruments Co., 227 Fulton St., New York 7, N.Y.—46

Superior Insulating Tape Co., 3100 Lambdin, St. Louis 15, Mo.—38

Superior Metal Corp., Clearing, Ill.—45

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SYLVANIA
MADE IN U.S.A.

ELECTRONIC TUBES

As Perfect As Can Be

When you talk of perfection in the manufacture of electronic tubes, how far can you go?

We believe, only as far as it is possible to control production — from the raw materials right through to elaborate testing equipment.

That's what Sylvania Electric does, to the *n*th degree. Beginning with the basic substances selected for the manufacture of Sylvania tubes, you'll find our chemical and metallurgical laboratories testing every part — experimenting to discover new and better materials—new alloys, new compounds for further improving our wide variety of electronic units.

In Emporium, Pa., a specially equipped tube plant provides extensive facilities for making over 8500 of the precise small parts that go into Sylvania tubes. Estimates show over 600 million of these intricate parts are turned out each month!

Further, to insure meeting its own high standards, Sylvania has a particular plant that makes Sylvania-designed testing equipment. One such unit measures static and dynamic qualities of radio tubes — plate current, filament voltage, gas current, plate resistance, power output, mutual conductance and amplification factor—as well as the characteristics of electronic devices.

Controlled production — the keynote of our high standard of manufacture. From Standard and Lock-In Type Receiving Tubes and Cathode Ray Tubes, all the way to Strobotrons, Pirani Gauges and Thermocouple Tubes — plus the latest addition to the family, our tiny, former proximity fuze vacuum tube — Sylvania controlled production *makes* electronic units that are—"as perfect as can be."

SYLVANIA ELECTRIC

Emporium, Pa.

MAKERS OF RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES; FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES; ELECTRIC LIGHT BULBS

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Superior Porcelain Co., Parkersburg, W.Va.—4
Superior Tube Co., P.O. Drawer 191, Norristown, Pa. CE—R. H. Gabel—45
Supreme Electric Prods. Corp., 194 Vassar St., Rochester 7, N.Y. CE—R. J. Barker—44
Supreme Instruments Corp., Box 552, Greenwood, Miss. CE—R. Soward—46, 52, 53, 75
Supreme Publications, 9 S. Kedzie Ave., Chicago 12, Ill. Editor—M. M. Beiten—9
Surplus Material Corp., Box 228, Stryker, Ohio—45, 84
Surprenant Elec. Insulating Co., 84 Purchase St., Boston 10, Mass.—38
Swain Nelson Co., 2320 Glenview Rd., Glenview, Ill.—17, 77
Swedish Iron & Steel Corp., 17 Battery Pl., New York 4, N.Y.—22, 45
Sylvania Electric Products, Inc., Emporium, Pa. DE—E. Finley Carter—2, 4, 5, 13, 17, 21, 23, 24, 27, 29, 31, 33, 36, 38, 44-46, 51-53, 55, 56, 59, 62, 63, 67, 68, 70, 73, 75, 80, 82, 84
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Symphonic Radio & Electronic Corp., 292 Main St., Kendall Sq., Cambridge 42, Mass. CE—D. Rosen—2, 63
Synar Corp., Wilmington, Del.—41
Synchro-Start Prods. Inc., 221 E. Cullerton St., Chicago 16, Ill.—27
Synthane Corp., Oaks, Pa. CE—S. W. Place—51
Synthetic Plastics Co., 88 St. Francis St., Newark 5, N.J.—51
Syracuse Ornamental Co., 581 S. Clinton St., Syracuse 2, N.Y. CE—F. Fisher—11, 16, 51

Takk Corp., 26 W. Market St., Newark, Ohio Dir. of Res.—R. B. Taylor—67
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W. A. Taylor & Co., 7300 York Rd., Baltimore 4, Md.—46
Taylor Fibre Co., Norristown, Pa.—51
Taylor Tubes Inc., 2312 Wabansia Ave., Chicago 47, Ill. CE—Frank Hajek—67, 68, 80, 82
Taylor-Wharton Iron & Steel Co., High Bridge, N.J.—44
Taylor-Winfield Corp., 1052 Mahoning Ave., Warren, Ohio—43
Tech-Art Plastics Co., 41-01 36th Ave., L.I.C. 1, N.Y.—51
Tech-Master Prods. Co., 123 Prince St., New York 12, N.Y.—63
Tech. Apparatus Co., Inc., 165 Washington St., Boston 8, Mass. CE—Louis Hanopol—2, 24, 25, 31, 75, 78, 82
Tech. Appliance Corp., 4106 De Long St., Flushing, L.I., N.Y. CE—Carl Goudy—4, 5
Tech. Devices Corp., Beaufort & Eagle Rock Aves., Roseland, N.J. CE—A. H. Hotopp—24
Tech. Labs., 337 Central Ave., Jersey City 7, N.J. CE—Magnus Bjorndal—6, 52, 59, 67, 70, 73, 75, 78
Tech. Plastics Co., 618 Clyde St., Pittsburgh 13, Pa.—51
Tech. Precision Corp., 327 E. 84th St., New York 28, N.Y. CE—Kurt Stoye—1, 24, 43
Tech. Prods. Co., Box 93, Memphis, Tenn.—46
Tech. Radio Co., 275 9th St., San Francisco 3, Calif. CE—F. D. Wells—4, 5, 13, 14, 24, 35, 41, 51, 52, 55, 62, 63, 77, 78
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Technisonic Recording Labs., 818 S. Kingshighway Blvd., St. Louis 10, Mo.—66
Techtmann Industries Inc., 828 N. B'way, Milwaukee 2, Wis.—70
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Teletone Radio Co., 609 W. 51st St., New York 19, N.Y. CE—Benjamin Singer—63
Television Corp., 1400 W. Wrightwood, Chicago 14, Ill.—63
Television Magazine, 600 Madison Ave., New York 22, N.Y.—9
Televiso Prods. Co., 7466 Irving Park Rd., Chicago 34, Ill. CE—H. D. von Jenef—24
Telex Inc., 12 N. Washington, Minneapolis 1, Minn. CE—Paul Thompson—2, 42
Telicon Corp., 851 Madison Ave., New York 21, N.Y. CE—Richard Shottenfeld—5, 23, 63
Templetone Radio Mfg. Corp., 100 Garfield Ave., New London, Conn. CE—Dale Pollack—1, 11, 16, 63, 64, 75
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Tenney Engineering, Inc., 26 Ave. B., Newark 5, N.J. CE—C. Sewell—24
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Terminal Radio Corp., 85 Cortlandt St., New York 7, N.Y. CE—Jack Simon—2, 25, 63, 75
L. H. Terpening Inc., 220 E. 23rd St., New York 10, N.Y.—20
Texas State Network, 1201 W. Lancaster, Ft. Worth, Texas—10
Therapeutic Oscillator Co., Des Moines, Iowa—36
Thermador Electrical Mfg. Co., 5119 S. Riverside Dr., Los Angeles 22, Calif. CE—J. W. Wardell—17, 77
Thermal Syndicate Ltd., 12 E. 46th St., New York 17, N.Y. Mgr.—Wm. W. Winship—15, 38
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Thomas & Betts Co., 36 Butler St., Elizabeth, N.J.—19, 35
Thomas-Gibb Welding Co., Lynn, Mass.—27
Thomas & Skinner Steel Prods. Co., 1113 E. 23rd St., Indianapolis 5, Ind. CE—H. P. Rockwell—22, 35, 44, 45
R. Thomas & Sons Co., Lisbon, Ohio CE—H. P. Sleeman—15, 38
Thomas Steel Co., Delaware Ave., Warren, Ohio—22, 45
Thompson-Bremer & Co., 1640 W. Hubbard St., Chicago 22, Ill.—35
H. C. Thompson Clock Co., 33 Federal St., Bristol, Conn.—68
Geo. S. Thompson Corp., 5240 Huntington Dr., Los Angeles 32, Calif.—35
Thordarson Elec. Mfg. Co., 500 W. Huron St., Chicago 10, Ill. CE—Robt. Hanson—2, 17, 28, 30, 37, 77, 82
Thwing-Albert Inst. Co., Penn St. & Pulaski Ave., Phila. 44, Pa.—75
Tibbetts Labs., 12 Norfolk St., Camden, Me. CE—R. W. Tibbetts—47, 65
Times Telephoto Equip. Inc., 229 W. 43rd St., New York 18, N.Y. CE—A. G. Cooley—29, 77, 80
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Transformer Prods. Inc., 26 Cornelison Ave., Jersey City 4, N.J. CE—S. Halpin—77
Translite Inc., 639 Kent Ave., B'klyn 11, N.Y.—80
Transmitter Equipment Mfg. Co. Inc., 345 Hudson St., New York 14, N.Y. CE—Samuel L. Sack—1, 2, 10, 11, 24, 28, 29, 59, 61-63, 69, 78
Trav-ler Karanola Radio & Telev. Corp., 571 W. Jackson Blvd., Chicago 6, Ill. CE—R. J. O'Brien—63

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There's an "Eveready" Radio Battery for *any* receiver you design!

No 915
EVEREADY
BATTERY
412
(+)
22½
EVEREADY
TRADE MARK
MINI-MAX
"B" BATTERY FOR MINIATURE RADIOS, ETC.
(–)

For Pocket Radio Receivers: ½-ounce, 1.5-volt No. 915 "A" Battery (left) and 1⅓-ounce, 22½-volt No. 412 "B" Battery (right) comprise complete power complement.

IMPORTANT!
No. 758
EVEREADY
MINI-MAX
"A-B"
RADIO BATTERY PACK

For Home Radios: New No. 758 "A-B" Pack gives same voltages, same capacity, as older, larger No. 748 — permits smaller, lighter radios.

No. 754
EVEREADY
MINI-MAX
"A-B"
RADIO BATTERY PACK
FOR PORTABLE RADIOS

For Portable Receivers: "Eveready" No. 754 is the first "A-B" portable battery pack to include the longer-lasting "Mini-Max" "B" section. Delivers 90 volts plate; 7½-9 volts filament supply.

TYPES	VOLTAGE	LENGTH	WIDTH	HEIGHT	TERMINALS	SUGGESTED CURRENT RANGE	WEIGHT BATTERY
"A-B" PACKS FOR HOME RECEIVERS							
754	7.5 & 9 A	$10\frac{15}{32}$″	3¼″	4″	Socket —, +7.5 & 9	A: 50 m.a.	6 lb. 8 oz.
	90 B				Socket —, +90	B: 5.0 to 15.0 m.a.	
748	1.5 A	$15\frac{13}{16}$″	$4\frac{15}{32}$″	$6\frac{15}{16}$″	Socket —, +1.5	A: 200-300 m.a.	23 lb. 11 oz.
	90 B				Socket —, +90	B: 7.0-12.0 m.a.	
758	1.5 A	$10\frac{11}{16}$″	$4\frac{3}{16}$″	$6\frac{15}{16}$″	Socket —, +1.5	A: 200-300 m.a.	14 lb. 8 oz.
	90 B				Socket —, +90	B: 7.0-12.0 m.a.	
"A" BATTERIES FOR HOME RECEIVERS							
A-1300	1.25	$5\frac{5}{16}$″	$4\frac{11}{32}$″	8⅝″	Socket —, +1.25	100-600 m.a.	5 lb. 13½ oz.
740	1.5	$4\frac{19}{32}$″	3⅞″	$7\frac{25}{32}$″	Socket —, +1.5	100-350 m.a.	6 lb. 4 oz.
#6 Ignitor	1.5	2⅝″ D		6⅝″	Screw —, +1.5	100-250 m.a.	2 lb. 2 oz.
"B" BATTERY FOR HOME RECEIVERS							
585	45	8″	$3\frac{3}{32}$″	7¼″	Socket —, +22.5, +45	7.0-12.0 m.a.	8 lb. 6 oz.
"A" BATTERIES FOR PORTABLE RECEIVERS							
718	6	$3\frac{15}{16}$″	2¾″	5½″	Socket —, +6	50 m.a.	2 lb. 13 oz.
741	1.5	3⅞″	$2\frac{11}{16}$″	5⅜″	Socket —, +1.5	100-350 m.a.	2 lb. 13 oz.
742	1.5	$2\frac{19}{32}$″	$2\frac{19}{32}$″	4″	Socket —, +1.5	100-250 m.a.	1 lb. 6 oz.
743	1.5	$3\frac{13}{16}$″	$2\frac{21}{32}$″	$4\frac{1}{32}$″	Socket —, +1.5	100-300 m.a.	2 lb. 1 oz.
745	1.5	3⅞″	$1\frac{7}{16}$″	$10\frac{25}{32}$″	Socket —, +1.5	100-350 m.a.	2 lb. 13 oz.
746	4.5	$3\frac{15}{16}$″	$1\frac{5}{16}$″	$4\frac{21}{32}$″	Socket —, +4.5	50 m.a.	1 lb. 4 oz.
747	6	3⅞″	$1\frac{7}{16}$″	$10\frac{25}{32}$″	Socket —, +6	50 m.a.	2 lb. 13 oz.
"B" BATTERIES FOR PORTABLE RECEIVERS							
482	45	$3\frac{19}{32}$″	$1\frac{27}{32}$″	5½″	Socket —, +45	5.0-15.0 m.a.	1 lb. 14 oz.
738	45	3″	$2\frac{5}{16}$″	4⅛″	Socket —, +45	5.0-15.0 m.a.	1 lb. 4 oz.
762	45	$4\frac{3}{16}$″	$2\frac{19}{32}$″	5⅜″	Socket —, +45	5.0-15.0 m.a.	2 lb. 11 oz.
"A" BATTERY FOR PERSONAL RECEIVERS							
950	1.5	1²¹⁄₆₄″ D		$2\frac{27}{64}$″	Flat Contact —, +1.5	25-100 m.a.	3⅓ oz.
"B" BATTERIES FOR PERSONAL RECEIVERS							
455	45	2⅝″	1″	$3\frac{11}{16}$″	Snap Type —, +45	1.0-10.0 m.a.	8 oz.
467	67.5	$2\frac{13}{16}$″	1⅜″	$3\frac{45}{64}$″	Snap Type —, +67.5	1.0-10.0 m.a.	12 oz.
"A" BATTERIES FOR POCKET RECEIVERS							
915	1.5	³⁵⁄₆₄″ D		$1\frac{31}{32}$″	Flat Contact —, +1.5	25-100 m.a.	½ oz.
935	1.5	$1\frac{1}{32}$″ D		2″	Flat Contact —, +1.5	25-100 m.a.	1⅓ oz.
"B" BATTERIES FOR POCKET RECEIVERS							
412	22.5	$1\frac{1}{32}$″	⅝″	2″	Flat Contact —, +22.5	0.3-1.0 m.a.	1⅓ oz.
413	30	$1\frac{1}{32}$″	⅝″	$2\frac{9}{16}$″	Flat Contact —, +30	0.3-1.0 m.a.	1⅔ oz.
420	22.5	$1\frac{5}{16}$″	$\frac{31}{32}$″	$2\frac{3}{16}$″	Flat Contact —, +22.5	0.5-2.0 m.a.	2⅓ oz.
430	30	$1\frac{5}{16}$″	1″	$2\frac{13}{16}$″	Flat Contact —, +30	0.5-2.0 m.a.	3 oz.

Write for your copy of
Battery Engineering Bulletin No. 1

The registered trade-marks "Eveready" and "Mini-Max" distinguish products of National Carbon Company, Inc.

EVEREADY
TRADE-MARK

NATIONAL CARBON COMPANY, INC.
30 East 42nd Street, New York 17, N.Y.
Unit of Union Carbide and Carbon Corporation
UCC

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U.S. Mica Mfg. Co., 1521 Circle Ave., Forest Park, Ill.—15, 38
U.S. Radium Corp., 535 Pearl St., New York 7, N.Y.—45
U.S. Rubber Co., 1230 6th Ave., New York 20, N.Y.—12, 41, 83, 84
U.S. Television Mfg. Corp., 3 W. 61st St., New York 29, N.Y. CE—Harold Nielsen—10, 59, 63, 67, 77, 78
U.S. Testing Co., Inc., 1415 Park Ave., Hoboken, N.J. CE—Dr. T. C. Taylor —20, 24
U.S. Tool Co. Inc., 255 N. 18th St., Ampere, E. Orange, N.J. CE—A. Melnick—43
U.S. Trunk Co., Inc., 951 B'way, Fall River, Mass. CE—Sydney S. Feinberg—11
United Transformer Corp., 150 Varick St., New York 13, N.Y. CE—Louis G. Burnell—2, 17, 18, 27, 28, 30, 31, 52, 59, 75, 77, 82
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Universal Battery Co., 3410 S. LaSalle St., Chicago 16, Ill.—7
Universal Clay Prods. Co., 1505 E. 1st St., Sandusky, Ohio—15, 38
Universal Drafting Machine Co., 1426 W. 3rd St., Cleveland 13, Ohio—20
Universal Microphone Co., 424 Warren Lane, Inglewood, Calif. CE—Les Williard—39, 47, 58, 65
Universal Plastics Corp., 235 Jersey Ave., New Brunswick, N.J.—51
Universal Recording Co., Inc., 1780 B'way, New York 19, N.Y.—66
Universal Winding Co., 1655 Elmwood Ave., Cranston, R.I.—43
Universal X-Ray Prods. Inc., 1800 K. N. Francisco Ave., Chicago 47, Ill. CE—J. J. Heger—18, 38, 60, 68, 80
University Loudspeakers Inc., 225 Varick St., New York 14, N.Y. CE—S. White—42, 47
R. E. Uptegraff Mfg. Co., Box 182 Scott Scottdale, Pa.—77
W. Urban & Co., 1413-21 Vine St., Phila. 2, Pa. GM—E. A. Cooke—35
Utah Radio Prod. Co., 820 Orleans St., Chicago 10, Ill. CE—Ralph Kenyon— 11, 17, 28, 30, 39, 42, 58, 65, 70, 73, 77
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Utica Drop Forge & Tool Corp., 2800 Whitesboro St., Utica 4, N.Y. CE—W. Barnes—43
Utilities Service Co., 1 Pine St., Allentown, Pa.—4, 5

V. Precision Instrument Mfg. Co. Inc., Elmhurst, L.I., N.Y.—23
Vac-O Grip Co., 2025 Detroit Ave., Toledo 6, Ohio CE—P. Q. Williams —35
Vaco Prods. Co., 317 E. Ontario St., Chicago 11, Ill.—43
Vacolite Co., 3001-3003 Henderson St., Dallas, Tex. CE—W. D. Penn—17, 63, 77
Vacutron Inc., 2819 12th St., Arlington, Va.—27
Valpey Crystal Corp., Box 321, Holliston, Mass. CE—Donald MacDougall —23
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Van Norman Co., Springfield, Mass.—36
D. Van Nostrand Co., 250 4th Ave., New York 3, N.Y.—9
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Max Van Pels, 441 Lexington Ave., New York 17, N.Y.—25
Jack C. Van Ryn, Woodstock, N.Y.—20
Harold C. Vance, 309 Redmond Ave., Haddonfield, N.J.—20
Vancouver Radio Labs. Ltd., 4515 Main St., Vancouver, B.C., Canada CE— Edward M. Chisholm—1, 2, 63, 77, 78
Varflex Corp., N. Jay St., Rome, N.Y.— 38, 57
Variaten Cinema Eng. Co., 1508 W. Verdugo Ave., Burbank, Calif.—6, 19, 73
Vasco Electrical Mfg. Co., 4116 Avalon Blvd., Los Angeles 11, Calif.—43
Carroll B. Vaughan, 233 W. 42nd St., New York 18, N.Y.—20
Veeder-Root, Inc., Hartford, Conn.—45
Vendo Co., 1910 Grand, Kansas City 8, Mo.—5

(Continued on page 94A)

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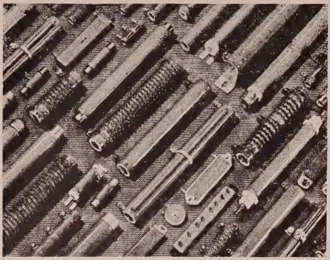

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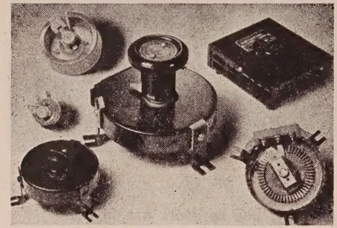

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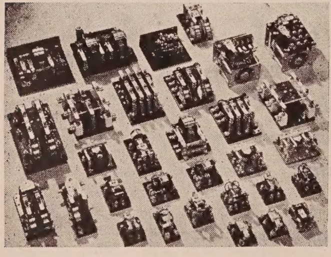

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(Continued from page 92A)

Vertrod Corp., 60 E. 42nd St., New York 17, N.Y.—4, 5

James Vibrapower Co., Inc., 1551 Thomas St., Chicago 35, Ill.—67

Vibration Mfg. Co., 110 Stack St., Middletown, Conn.—43

Vibroplex Co., 832 B'way, New York 3, N.Y.—40

Victor Insulators, Inc., Maple Ave., Victor, N.Y.—38

Victoreen Instrument Co., 3800 Perkins Ave., Cleveland 14, Ohio—70, 80

Victory Mfg. Co., 1724 W. Arcade Pl., Chicago 12, Ill.—11, 16, 35, 51

Victory Mfg. Co., 1105 S. Fairoaks Ave., S. Pasadena, Calif.—35

Victory Radio Corp., 155 W. 72nd St., New York 23, N.Y.—25

Viewtone Co., 203 W. 18th St., New York 3, N.Y. CE—Al Nadel—63

Viking Instruments, Inc., Stamford. Conn.—25

Vita-Var Corp., 46 Albert Ave., Newark 2, N.J.—41

Vitroseal Corp., 342 Crescent Ave., Wyoming, Cincinnati 15, Ohio CE—Edgar A. Wegert—19, 35

Vlectrical Eng. Co., 828 N. Highland Ave., Los Angeles 38, Calif. CE—Chas. Zingle—4, 18, 63

Vokar Corp., 7300 Huron River Dr., Dexter, Mich. CE—R. W. Werfel—17, 49, 50

Vokel Bros. Machine Wks., 1943 W. Manchester, Los Angeles 44, Calif.—43

Vreeland Mfg. Co., 2020 S.W. Jefferson St., Portland 1, Ore. CE—Whitney Vreeland—43

Vulcan Electric Co., 600 Broad St., Lynn, Mass.—43

WLW Engineering-Crosley Corp., 140 W. 9th St., Cincinnati 2, Ohio CE—R. J. Rockwell—2, 10, 20, 78

A. H. Waage Electric Co., 54 Park Pl., New York 7, N.Y.—43

Wadsworth Electric Mfg. Co., Inc., 20 W. 11th St., Covington, Ky.—68, 73

Wadsworth Watch Case Co., 5th & Clay, Dayton, Ky.—35

Wagner Electric Corp., 6410 Plymouth Ave., St. Louis 14, Mo.—50

Stevens Walden, Inc., 475 Shrewsbury St., Worcester 4, Mass.—35, 43

Waldes-Koh-I-Noor, Inc., 4716 Austell Pl., L.I.C. 1, N.Y.—35

Geo. Walker Co., 118 Amsterdam Ave., Passaic, N.J.—35

H. V. Walker Co., Elizabeth, N.J.—41

Verl G. Walker Co., 205 W. Jackson, Medford, Ore.—25

Walker-Jimieson, Inc., 311 S. Western Ave., Chicago 12, Ill. CE—Gus Knaack—1, 2, 4, 5, 12, 13, 17-19, 21, 25, 27, 30, 31, 35, 39, 42, 46, 47, 52-54, 56, 58, 59, 63, 65, 67, 68, 70, 72, 73, 75, 77, 80-82, 84
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Walker-Turner Co. 639 South Ave., Plainfield, N.J.—43

W. T. Wallace Mfg. Co., Box 34, Peru, Ind. CE—Joe Myers—11, 16, 23

Wallace & Tiernan Prods., Inc., 1 Main St., Belleville 9, N.J. CE—J. R. Mackay—24

Wallschlaeger, Ellison & Holt, 2538 Wilcox St., Chicago 12, Ill.—20

Walser Automatic Timer Co., 420 Lexington Ave., New York 17, N.Y.—68, 73

Walsh Eng. Co., Box 430, Elizabeth 2, N.J. GM—Craig Walsh—2, 17, 20, 24, 63, 77

Waltham Screw Co., 77 Rumford Ave., Waltham, Mass.—35

Wappler, Inc., 27, W. 24th St., New York 10, N.Y. CE—A. C. Wappler—27

Ward Leonard Electric Co., 83 South St., Mt. Vernon, N.Y. CE—W. W. Miller—68, 70, 82
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The Ward Prods. Corp., 1523 E. 45th St., Cleveland 3, Ohio CE—S. X. Ludwig—4
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Northam Warren Corp., Barry Pl., Stamford, Conn.—19, 35, 58

Warren Telechron Co., Ashland, Mass.—50

Chas. F. Warrick, 16251 Hamilton Ave., Detroit 3, Mich.—73

Warwick Mfg. Co., 4640 W. Harrison, Chicago 44, Ill. CE—Howard A. Gates—24

Washington Porcelain Co., Washington, N.J.—38

Waterbury Button Co., 835 S. Main St., Waterbury, Conn.—51

Waterbury Companies, Inc., Way Blvd., Waterbury 90, Conn.—51

Waterman Prods. Co., 2445 Emerald St., Phila. 25, Pa.—2, 53, 78

Waters-Conley Co., 501 1st Ave. N.W., Rochester, Minn. CE—R. E. Jones—64

Watertown Mfg. Co., 3 Porter St., Watertown, Conn.—51

Watlow Electric Mfg. Co., 1320 N. 23rd St., St. Louis 6, Mo. CE—Louis Desloge—36

Watson Standard Co., 225 Galveston Ave., Pittsburgh 12, Pa.—41, 83

Watterson Radio Mfg., Box 5, 2700 Swiss Ave., Dallas 1, Tex. CE—R. F. Coerver—25

Waugh Labs., 420 Lexington Ave., New York 17, N.Y.—75

Earl Webber Co., 4352 W. Roosevelt, Chicago 24, Ill.—44

F. Weber Co., 1220 Buttonwood St., Phila. 23, Pa.—26

Webster-Chicago Corp., 5610 Bloomingdale Ave., Chicago 39, Ill. CE—N.L. Conrad—22, 50, 64, 65
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Webster Elec. Co., 1900 Clark Ave., Racine, Wis.—55, 65

Webster Prods., 3825 Armitage, Chicago 47, Ill.—21, 49, 64

Wedemeyer Electronic Supply Co. of Mich., 221 E. Liberty St., Ann Arbor, Mich.—25

P. G. Weidler, 470 W. 24th St., New York 11, N.Y.—20

Welch Mfg. Co., 1515 N. Sedgwick St., Chicago 10, Ill. CE—Wm. Duncan—46, 60

Weldon & Carr, 1605 Conn. Ave. N.W., Washington 9, D.C.—20

Well Surveys, Inc., 624 E. 4th St., Tulsa 3, Okla.—24

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Weller Bros., 516 Northampton St., Easton, Pa. CE—C. E. Weller—43

Wellmade Electric Mfg. Co., Torrington, Conn.—43

Wellman Mfg. Co., 7122 Melrose Ave., Los Angeles 46, Calif. CE—Carl Elissen—23, 44

Wells-Gardner & Co., 2701 N. Kildare Ave., Chicago 39, Ill. CE—L. J. Biskner—63

W. H. Welsh Co., 2241 Indiana Ave., Chicago 16, Ill. CE—F. D. Yocum—42

Weltronic Co., 19500 W. 8-Mile Rd., Detroit 19, Mich. SM—Spencer C. Hinds—27

Wenkstern Hasley Co., 305 1st St. S.W., Cedar Rapids, Iowa—23

R. D. Werner Co., Inc., 380 2nd Ave., New York 10, N.Y.—51

Wesbar Stamping Corp., West Bend, Wis.—35

West End Lithograph Co., 600 E. 2nd St., Los Angeles 12, Calif.—43

West Shore Labs., Box 117, Marblehead, Mass.—75

West Virginia Pulp & Paper Co., 230 Park Ave., New York 17, N.Y.—38

West Virginia Radio Corp., Morgantown, W.Va.—10

Western Brass Mills, Div. of Olin Industries, Inc., East Alton, Ill.—45

Western Cable Battery Co., 395 Sibley St., St. Paul, Minn.—7

Western Cartridge Co., East Alton, Ill.—45

Western Electric Co., 195 B'way, New York 7, N.Y. Mgr—S. P. Taylor—1, 2, 4, 12, 23, 30-32, 34, 39, 40, 42, 47, 48, 52, 53, 55, 58, 62, 63, 65, 68, 70, 75, 78, 80, 84
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Western Electro-Chemical Co., Oakland, Calif.—44

Western Electro-Mechanical Co., 300 B'way, Oakland, Calif. CE—W. W. Scherer—68, 77

Western Felt Wks., 4035 Ogden Ave., Chicago 23, Ill.—51

Western Geophysical Co., 711 Edison Bldg., Los Angeles 11, Calif.—24

Western Instrument Co., 5115 Kinsie St., Los Angeles 22, Calif. CE—A. K. Edgerton—20, 24, 77

Western Insulated Wire Co., 1151 S. B'way, Los Angeles 15, Calif. CE—E. H. Lewis—84

Western Lithograph Co., 600 E. 2nd St., Los Angeles 54, Calif.—51

Western Mfg. Supply Co., 1400 W. 22nd St., Kearney, Neb. CE—D. Smith—4, 25

Western Sound & Electric Labs., Inc., 3512 W. St. Paul, Milwaukee 8, Wis. CE—E. W. Dieringer—2, 24, 65, 69

Western Sound Service, Inc., 607 Skinner Bldg., Seattle 1, Wash.—25

Western Union Telegraph Co., 60 Hudson St., New York 13, N.Y.—10

Westinghouse Electric Corp., Lamp Div., MacArthur Pl., Bloomfield, N.J.—56, 80
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Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. CE—Dean Wisleder—1, 3-5, 8, 10, 13, 15, 17, 27, 34, 36, 38, 41, 45, 46, 49, 50, 57, 60, 62, 63, 67, 68, 70-73, 77, 78, 80, 82-84.
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Westinghouse Electric Corp., Radio & X-Ray Div., 2519 Wilkens Ave., Baltimore 3, Md.—36, 80

Weston Elec. Inst. Corp., 578 Frelinghuysen Ave., Newark 5, N.J. CE—John H. Miller—46, 75

Wheelco Instruments Co., 847 W. Harrison St., Chicago 7, Ill.—46, 75

H. A. Wheeler, 259-09 Northern Blvd., Gt. Neck, N.Y.—20
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Wheeler Insulated Wire Co., 378 Washington Ave., Bridgeport 4, Conn. CE—Geo. B. Horn—12, 17, 77, 84

Wheeling Stamping Co., Wheeling, W.Va.—51

Wheeling Steel Corp., Wheeling Steel Corp. Bldg., Wheeling, W.Va.—22, 45

Whisk Labs., 145 W. 45th St., New York 19, N.Y.—5, 30

S. B. Whistler & Sons, Inc., 752-756 Military Rd., Buffalo 17, N.Y.—43

Whitaker Cable Corp., 1307 Burlington Ave., Kansas City 16, Mo.—12

David White Co., 315 Court St., Milwaukee 12, Wis.—26

S. S. White Dental Mfg. Co., Industrial Div., 10 E. 40th St., New York 16, N.Y.—35, 51, 70
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White Equip. Co., 910 E. 63rd St., Indianapolis, Ind. CE—John W. White; Eugene J. Crugan—23

White Labs., Box 71, West Lynn, Mass.—20

White Research Assoc., 899 Boylston St., Boston 1, Mass.—24

White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.—68

Whitehead Stamping Co., 1638 W. Laffayette Blvd., Detroit 16, Mich.—35

Whiting & Davis Co., Inc., 23 W. Bacon St., Plainville, Mass.—63

Whitney Screw Co., Nashua, N.H.—35

Wholesale Radio Labs., 744 W. B'way, Council Bluffs, Iowa—35

Wickes Bros., 515 N. Washington Ave., Saginaw, Mich.—26

Wickes, Inc., 1575 S. 6th St., Camden, N.J. Project Eng.—J. R. Lewis—1

Wickwire Spencer Steel Co., 500 5th Ave., New York 18, N.Y.—35

Wiedemann Machine Co., 1815 Sedgley Ave., Phila. 32, Pa.—43

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo. CE—A. P. Stuhrman—1, 2, 4, 8, 10, 11, 16, 17, 23, 24, 62, 63, 69, 78
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Wilcox-Gay Corp. 604 Seminary St., Charlotte, Mich. CE—Devereaux Martin—1, 2, 24, 29, 55, 63-65

John Wiley & Sons, Inc., 440 4th Ave., New York 16, N.Y.—9
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Wilkens-Anderson Co., 111 N. Canal St., Chicago 6, Ill.—46

Willard Storage Battery Co., 246 E. 131st St., Cleveland 8, Ohio—7

I. E. Willey, Box 1710, Hollywood 28, Calif. CE—I. E. Willey—20, 28, 66

R. O. Williams, 901 Walwood Pl., Kalamazoo 41, Mich.—20

Williams, Brown & Earle, Inc., 918 Chestnut St., Phila. 7, Pa.—26

Williams Recording Co., Long Beach, Calif.—66

Willor Mfg. Co., 794-B E. 140th St., New York 54, N.Y.—11, 16, 43

Willows Mfg. Corp., 341 39th St., B'klyn 32, N.Y.—19

Wilmak Corp., R.R. 3, Near M 139, Benton Harbor, Mich. CE—A. W. Magnuson—24

Wilmington Elect. Specialties Co., Inc., 405 Delaware Ave., Wilmington 9, Del.—25

Wilmington Fibre Specialty Co., Wilmington 99, Del.—51, 57

R. H. Wilmotte, Bowen Bldg., 815 15th St. N.W., Washington 5, D.C.—20

H. A. Wilson Co., 105 Chestnut St., Newark 5, N.J. CE—R. G. Waltenberg—45

Wilson Mfg. Co., 600 N. Andrews Ave., Ft. Lauderdale, Fla.—27, 73

Wincharger Corp., 7th & Division Sts., Sioux City, Iowa—4, 5, 59

Winchester Repeating Arms Co., New Haven, Conn.—7

Wind-Impeller Electric Wks., Ellsworth, Iowa—67

Windman Bros., 3225 Union Pacific Ave., Los Angeles 23, Calif.—51

J. H. Winn Sons, Winchester, Mass.—35

Winslow Co., 9 Liberty St., Newark 5, N.J. CE—Thomas P. Winslow—40, 70, 75

Winteradio, Inc., 1468 W. 25th St., Cleveland 13, Ohio—25

Winters & Crampton Corp., Grandville, Mich.—4, 5

Wipe-On Corp., 105 Hudson St., New York 13, N.Y.—41

Wirecorder Corp., 1805 Stroh Bldg., Detroit 26, Mich. CE—W. Babush—65

Wire Recorder Dev. Corp., Field Bldg., 135 S. LaSalle St., Chicago 3, Ill.—65

Wire Stripper Co., 1725 Eastham Ave., E. Cleveland 12, Ohio CE—F. M. Larned—43

Wirt Co., 5221 Greene St., Germantown, Pa. CE—J. H. Rebold—70

Wirtz Co., 2532 N. 3rd St., Milwaukee 12, Wis.—27, 44

Wisconsin Porcelain Co., Sun Prairie, Wis.—15, 38

Witco Chemical Co., 295 Madison Ave., New York 17, N.Y.—41, 83

Wodaam Corp., 730 5th Ave., New York 19, N.Y.—10

Wolfe Radio Distributing Co., 34 W. 17th St., New York 11, N.Y.—25

Wolverine Tube Co., 1411 Central Ave., Detroit 9, Mich.—45

C. D. Wood Electric Co., Inc., 826 B'way, New York 3, N.Y.—12, 19, 35

Woodall Industries, Inc., 7565 E. McNichols Rd., Detroit 5, Mich.—51

V. E. Woodcock, 1505 Race St., Phila. 2, Pa.—20

WOR Feature Records, 1440 B'way, New York 18, N.Y.—65, 66

Worcester Moulded Plastics Co., 8 Grafton St., Worcester 8, Mass.—51

Worcester Pressed Steel Co., 100 Barber Ave., Worcester 6, Mass. CE—William Werme—35

Workshop Assoc., Inc., 66 Needham St., Newton Highlands 61, Mass. CE—Gardiner G. Greene—4

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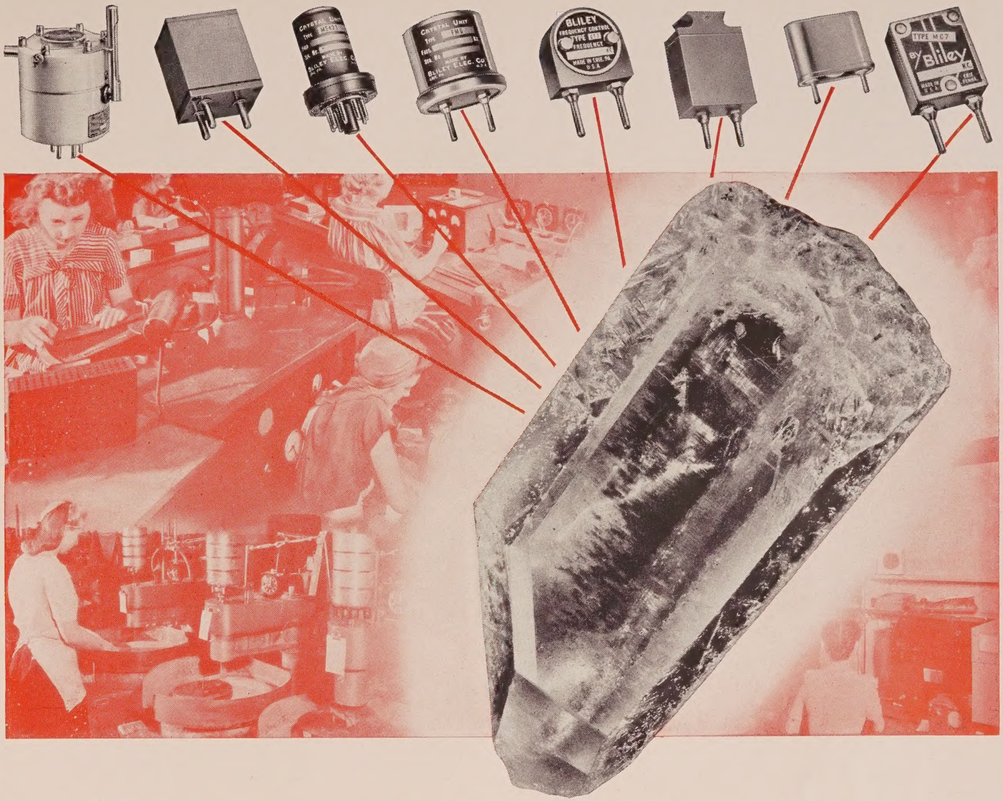

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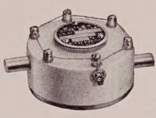
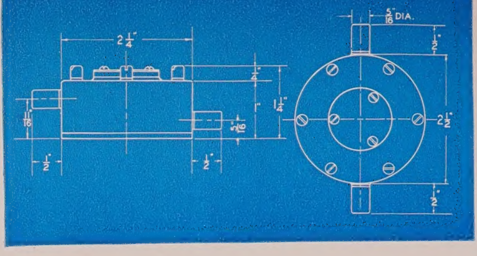
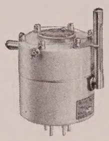
Precision holder employs micrometer screw control of upper crystal electrode for frequency adjustment after installation. For use in fixed equipment such as broadcast monitors and frequency standards.





5/16" DIA.
2 1/4"
1/2"
1/4"
1 1/4"
1"
11/16"
5/16"
1/2"
1/2"
2 1/2"
1/2"

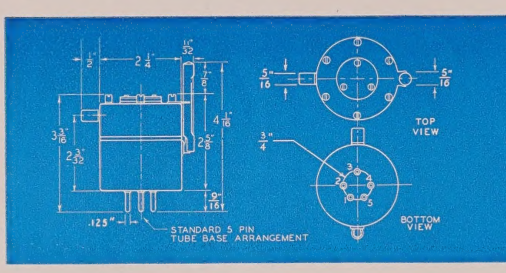


TYPE BC46T
200-5000kc.

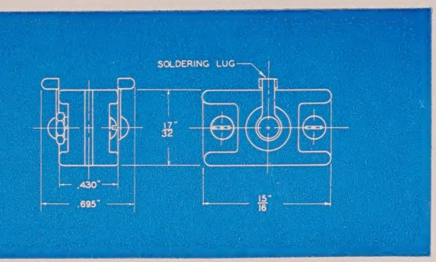
Combined BC10 crystal assembly and constant temperature oven. Heater current 1 amp. at 10V.—a.c. or d.c. Exceptional frequency stability. Fully approved by FCC for automatic frequency control in U.S.A. broadcast stations.

TYPE CF6
455kc.

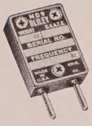
Single signal filter crystal unit. Exceptionally low holder capacity permits sharp signal discrimination in filter network of general communications receivers. Frequency 455kc. free from spurious responses within ±7kc.



1/2"
2 1/4"
11/32"
7/8"
4 1/16"
3 3/16"
2 3/32"
2 5/8"
9/16"
.125"
STANDARD 5 PIN TUBE BASE ARRANGEMENT
5/16"
5/16"
TOP VIEW
3/4"
3
4
2
1
5
BOTTOM VIEW

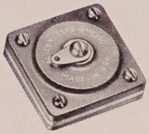


SOLDERING LUG
17/32"
.430"
.695"
15/16"



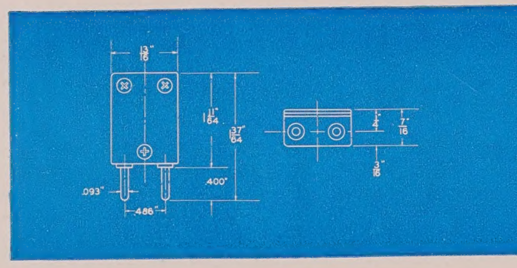
TYPE MC9
3000-11,000kc.

Compact holder for multichannel portable equipment where space is a factor. Gasket sealed against moisture and humidity. Suggested for all vehicular and air-borne equipment having low power oscillator tubes and circuits.

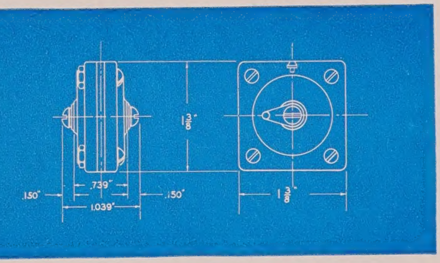


TYPE SMC100
100 and 1000kc.

Dual frequency crystal provides either 100kc. or 1000kc. source. In recommended circuit 1000kc. is within ±.05% and 100kc. can be adjusted to zero beat. Excellent for alignment of radio receivers.



13/16"
1 1/64"
37/64"
.093"
.400"
.486"
1/4"
7/16"
3/16"



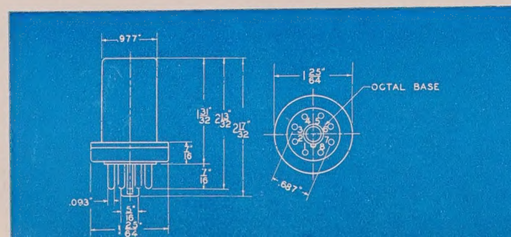
1 3/8"
.150"
.739"
.150"
1.039"
1 3/8"

TYPE MS433
1000kc.

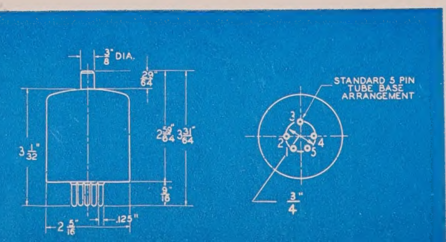
High precision crystal assembly sealed in metal tube envelope. Frequency within ±15 cycles at 20°C. when used in recommended oscillator. Will maintain frequency within 60 cycles between 0°C. and 50°C. Designed for use in frequency meters.

TYPE MO3
2000-11,000kc.

Constant temperature crystal oven combined with crystal assembly. Heater current 1 amp. at 6.3V. Compact unit provides temperature stability for maintenance of close tolerances in point to point communication.



.977"
1 31/32"
2 13/32"
2 17/32"
7/16"
7/16"
.093"
5/16"
1 25/64"
OCTAL BASE
.687"

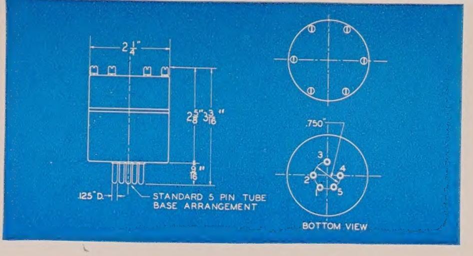


3/8" DIA.
29/64"
3 1/32"
2 59/64"
3 31/64"
9/16"
2 5/16"
.125"
STANDARD 5 PIN TUBE BASE ARRANGEMENT
3
4
2
1
5
3/4"

BLILEY ELECTRIC COMPANY • UNION STATION BUILDING, ERIE, PENNA.

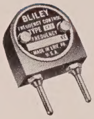
FIFTEEN YEARS OF CRYSTAL MANUFACTURING EXCLUSIVELY

Bliley CRYSTALS


2 1/4"
2 5/8"
3 3/16"
9/16"
.125" D.
STANDARD 5 PIN TUBE BASE ARRANGEMENT
.750"
3
4
2
5
BOTTOM VIEW

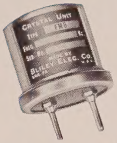
TYPE BC46R
70-200kc.

Constant temperature oven combined with special crystal assembly. Provides exceptional frequency stability. Heater current 1 amp. at 10V.—a.c. or d.c. Recommended for frequency standards and precision test equipment.



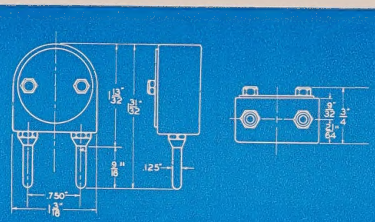
TYPE CF3
455kc.

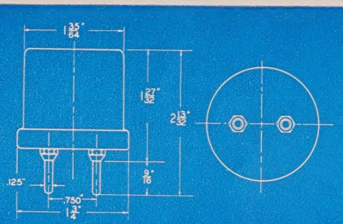
Single signal filter crystal unit. Frequency 455kc., ±5kc. — free from spurious responses within ±7kc. of fundamental. Designed for intermediate frequency filter in general communications receivers.

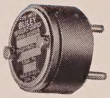


TYPE FM6
70-400kc.

Plated crystal rigidly clamped between resonant pins provides exceptional electrical and mechanical stability. Captive gasket seals case effectively for any service. For all applications requiring an accurate source of low frequency in this range.

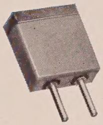

1 13/32
1 31/32
9/32
3/4
21/64
9/16"
.125"
.750"
1 1/8"


1 35/64"
1 27/32"
2 13/32"
9/16
.125"
.750"
1 3/4"



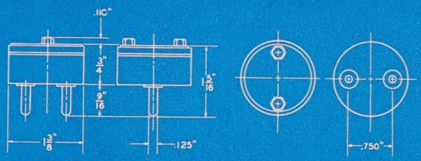
TYPE MO21
2000-11,000 kc.

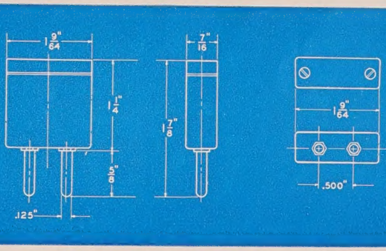
Flat holder is gasket sealed for dependable service. Excellent mechanical and electrical stability. Successor to Bliley type MO2 for general service.



TYPE SR5
3500-11,000 kc.

This unit is prototype of crystal stabilizer used in majority of AAF equipment. Case is gasket sealed at all openings for maximum protection. Suggested for multi-channel operation in airborne equipment.


.110"
3/4"
9/16"
1 5/16"
1 3/8"
.125"
.750"

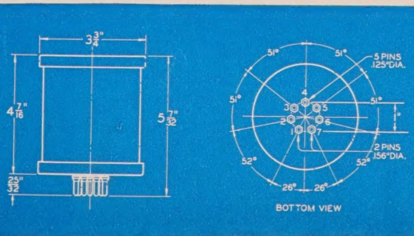

1 9/64"
7/16"
1 1/4"
1 7/8"
5/8"
.125"
1 9/64"
.500"

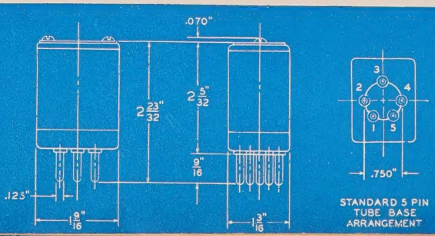
TYPE TC91
TEMPERATURE STABILIZER

Precision temperature control oven operates on 110 volts A.C., heater current 0.2 amperes. For use with type MC7, MC85, MO21 and AR Series crystals. Suggested for Broadcast Services, Frequency Monitors and Standards.

TYPE ART
3000-11,000 kc.

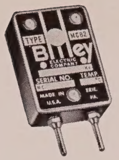
Constant temperature oven and crystal assembly in compact case. Heater current 1 ampere at 6.3 volts. Stabilizes crystal temperature at 70°C. for close tolerance requirements in VHF services.


3 3/4"
4 7/16"
5 7/32"
25/32"
51°
51°
51°
51°
5 PINS .125" DIA.
1"
4
3
5
2
6
1
7
52°
52°
2 PINS .156" DIA.
26°
26°
BOTTOM VIEW


.070"
2 23/32"
2 5/32
9/16
.123"
1 9/16"
1 3/4"
3
2
4
1
5
.750"
STANDARD 5 PIN TUBE BASE ARRANGEMENT

BLILEY ELECTRIC COMPANY • UNION STATION BUILDING, ERIE, PENNA.

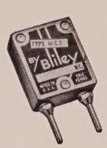
CONSULT BLILEY ENGINEERS ON ALL CRYSTAL PROBLEMS


TYPE MC82
Bliley
ELECTRIC COMPANY
SERIAL NO.
TEMP.
MADE IN U.S.A.
ERIE, PA.

TYPE MC85

400-1500kc.

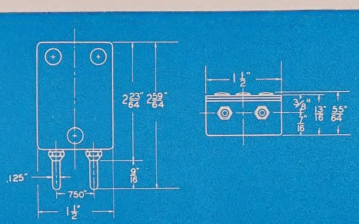
Utilizes fixed air-gap assembly with unclamped crystal. Glass spacers maintain relative position of electrodes. Holder accommodates quartz plate 1″ x 1″ for maximum activity with medium power tubes and circuits.

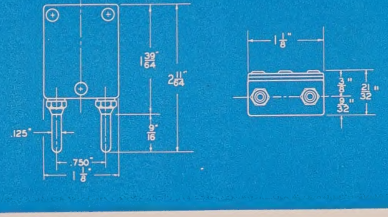

TYPE MC7
BY Bliley
MADE IN U.S.A.
ERIE PENNA.

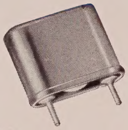
TYPE MC7

1700-11,000kc.

Gasket sealed holder with pressure air-gap crystal assembly. Ideal for multi-channel applications. Accommodates quartz plate up to .7″ x .9″ for adequate activity in medium power circuits. Used widely in marine radio-telephone equipment.


2 23/64"
2 59/64"
9/16"
.125"
.750"
1 1/2"
1 1/2"
3/8"
7/16"
13/16"
55/64"

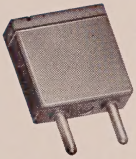

1 39/64"
2 11/64"
9/16"
.125"
.750"
1 1/8"
1 1/8"
3/8"
9/32"
21/32"



TYPE BH5

4500-9500kc.

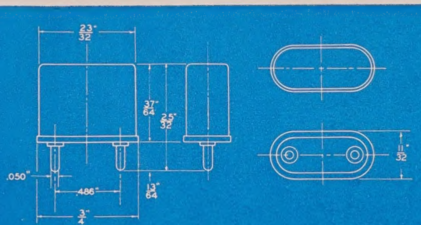
Midget holder with aluminum plated crystal mounted between spring contacts on wire supports. Hermetically sealed metal case protects assembly. Recommended for use only with low power oscillator tubes and circuits where space is at a premium.

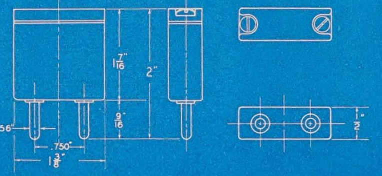


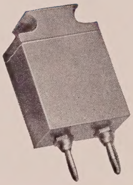
TYPE SR6

1700-11,000kc.

Pressure air-gap crystal assembly in gasket sealed phenolic case. Accommodates .750″ x .750″ quartz plate for adequate activity with medium power tubes and circuits, particularly low frequency range. Suggested for all mobile applications.


23/32"
37/64"
25/32"
.050"
.486"
13/64"
3/4"
11/32"

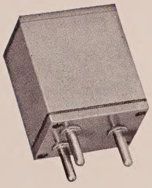

1 7/16"
2"
9/16"
.156"
.750"
1 3/8"
1/2"



TYPE SR7

1700-11,000kc.

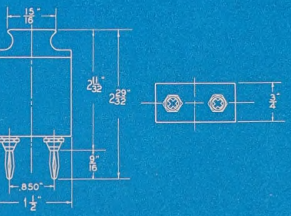
Heavy duty holder equipped with banana plug connections. Pressure air-gap crystal assembly provides excellent mechanical stability. Fully protected by gasket seals at all case openings. Recommended for marine use and similar applications.

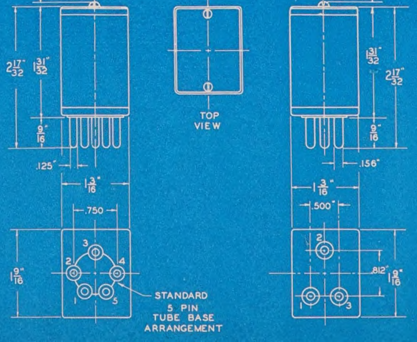


TYPE AR5W

400-11,000kc.

Compact unit supplied with 2 crystals for transceiver equipment where both transmitter and receiver are crystal controlled. Excellent mechanical and electrical stability over wide range of service conditions. Single crystal, specify type AR4W. If five pin base is desired specify AR5 or AR4.


15/16"
2 11/32"
2 29/32"
9/16"
.850"
1 1/2"
3/4"


.070"
2 17/32"
1 31/32"
9/16"
.125"
1 3/16"
.750"
1 9/16"
1
2
3
4
5
STANDARD 5 PIN TUBE BASE ARRANGEMENT
TOP VIEW
.070"
1 31/32"
2 17/32"
9/16"
.156"
1 3/16"
.500"
.812"
1 9/16"
1
2
3

BLILEY ELECTRIC COMPANY • UNION STATION BUILDING, ERIE, PENNA.

Bull. 27
28M—12-45
Printed in U.S.A.

The Directory Sections

How to use our Alphabetical and Product Directories

Part 2

The 1946 I.R.E. Yearbook contains three parts. Part 1 is the Institute of Radio Engineers Membership List, actually the largest published compilation of names of radio and electronic engineers. Part 2 (pages 1A to 96A) is an alphabetical directory of over 3000 firms serving or manufacturing for the radio-electronics industry. This index gives the firm name and address, the name of the chief engineer (preceded by the letters C.E.) where we could obtain it; and code numbers indicating 84 classifications of services, equipment, instruments and component parts as shown in the table to the right.

The completeness of this list depended upon information voluntarily supplied us. Our most vigorous efforts may not have made it complete. We will welcome additions and suggestions for the 1947 edition. (See pages 102A-103A for detailed listings.)

Part 3

Throughout Parts 2 and 3 are shown advertisements of firms which have seen in this useful Yearbook an opportunity to provide you with specific product data. These sponsoring companies have made it financially possible to provide a really comprehensive Yearbook to I.R.E. members. Their names are shown in bold type in the alphabetical list (Part 2) with cross reference to the page of their advertisements. In further appreciation for their support is the helpful index to their products which is Part 3, pages 101A to 188A.

To find the advertisers of a given product, let us say "Vacuum Tubes," look this product up in the table to the right and you will see it is classification #80. Turn to this classification in Part 3. (On page 122A is a table showing the page numbers for each product group.) To find all firms known to us as making this product, scan the alphabetical list for those showing #80 in the products code. To locate a particular advertiser's ad, turn to page 188A to the Index to Advertisers.

Please submit all changes, corrections, additions and classification questions to Wm. C. Copp, c/o Proceedings of the I.R.E., 330 West 42nd St., New York 18, N.Y.

KEY TO NUMBERS

1	Aircraft & Airport Radio Equip.
2	Amplifiers, Audio Frequency
3	Antenna Phasing Equip. & Accs.
4	Antennas, all types
5	Antenna Accessories
6	Attenuators
7	Batteries
8	Blowers & Cooling Fans
9	Books & Book Publishers
10	Broadcasting Stations
11	Cabinets
12	Cables
13	Capacitors; Fixed
14	Capacitors; Variable
15	Ceramics
16	Chassis
17	Choke Coils
18	Coils
19	Connectors
20	Consulting Engineers
21	Converters
22	Core Materials
23	Crystals
24	Custom Builders of Equiment
25	Distributors & Jobbers
26	Drafting Equip. & Supplies
27	Electronic Control Equipment
28	Equalizers
29	Facsimile Equipment
30	Filters
31	Frequency Measuring Equipment
32	Frequency Measuring Services
33	Fuses & Fuse Holders
34	Graphic Recorders
35	Hardware
36	Induction Heating Equipment
37	Inductors
38	Insulation
39	Jacks
40	Keys
41	Lacquers
42	Loudspeakers & Headphones
43	Mach'y & Tools for Radio Mfg.
44	Magnets
45	Metals
46	Meters
47	Microphones
48	Monitoring Equipment
49	Motor-Generators
50	Motors, very small
51	Moulded Products
51A.	Optical Screens, Mirrors and Materials
52	Oscillators
53	Oscillographs & Accessories
54	Panels
55	Phonograph Pick-ups
56	Pilot Lights & Assemblies
57	Plastics
58	Plugs
59	Power Supplies
60	Pumps, Vacuum
61	Racks
62	Radar, Also see Aircraft Equip.
63	Radio Receivers
64	Record Changing Mechanisms
65	Recording Equipment & Supplies
66	Recording Services
67	Rectifiers
68	Relays
69	Remote Controlling Equipment
70	Resistors
71	Sockets
72	Solder
73	Switches
74	Technical Schs. & Institutes
75	Testing & Measuring Equipment
76	Transcription Libraries
77	Transformers
78	Transmitters
79	Ultra-High Freq. Accs. & Equip.
80	Vacuum Tubes
81	Vibrators, Power Supply
82	Voltage Regulators
83	Waxes & Sealing Compounds
84	Wire, Copper & Precious Metal

I. R. E. YEARBOOK PRODUCT LISTINGS

1. AIRCRAFT & AIRPORT RADIO EQUIPMENT.
2. AMPLIFIERS, AUDIO FREQUENCY.
3. ANTENNA PHASING EQUIPMENT & ACCESSORIES.
4. ANTENNAS:
   - A. Broadcast.
   - B. Directional.
   - C. Dummy.
   - D. Police.
   - E. Ultra High Frequency.
   - F. Vertical.
5. ANTENNA ACCESSORIES.
6. ATTENUATORS.
7. BATTERIES:
   - A. Dry "A".
   - B. Dry "B".
   - C. Dry Miniature.
   - D. Wet Primary.
   - E. Wet Secondary.

Binding Posts, see Hardware.

8. BLOWERS & COOLING FANS.
9. BOOKS & BOOK PUBLISHERS.

Bridges, see Test Equipment.

10. BROADCASTING STATIONS & COMMUNICATIONS COMPANIES.

Bushings, see Hardware.

11. CABINETS.
12. CABLES:
    - A. Co-Axial.
    - B. Microphone.
    - C. Pre-Formed Harnesses.
    - D. Shielded.
    - E. Ultra-High Frequency.
13. CAPACITORS; FIXED:
    - A. Ceramic.
    - B. Electrolytic.
    - C. Mica.
    - D. Oil Filled.
    - E. Paper.
    - F. Pressurized Gas.
    - G. Vacuum.
14. CAPACITORS; VARIABLE:
    - A. Neutralizing.
    - B. Precision.
    - C. Temperature-Frequency Compensating.
    - D. Trimmer.
    - E. Tuning.
    - F. Vacuum.
15. CERAMICS:
    - A. Coil Forms.
    - B. Ground Mica.
    - C. Rods.
    - D. Sheets.
16. CHASSIS.
17. CHOKE COILS:
    - A. Audio Frequency.
    - B. Power.
    - C. Radio Frequency.

Coil Forms, see Ceramics.

18. COILS.

Condensers, see Capacitors.

19. CONNECTORS.

Consoles, see Amplifiers.

20. CONSULTING ENGINEERS:
    - A. Acoustic.
    - B. Electrical.
    - C. Mechanical.
    - D. Radio.
21. CONVERTERS:
    - A. Frequency.
    - *B. Rotary: see Motor Generators.*
    - C. Vibrator.
22. CORE MATERIALS:
    - A. Complete Cores.
    - B. Laminations.
    - C. Powdered Iron.
23. CRYSTALS:
    - A. Oscillating Quartz.
    - B. Piezo-Electric.
    - C. Rectifier.
24. CUSTOM BUILDERS OF EQUIPMENT.

Dials & Tuning Controls, see Hardware.

Discs, Recording, see Recording Equipment.

25. DISTRIBUTORS & JOBBERS OF RADIO EQUIPMENT & PARTS.
26. DRAFTING EQUIPMENT & SUPPLIES.

Dynamotors, see Motor Generators.

27. ELECTRONIC CONTROL EQUIPMENT:
    - A. Air Conditioning Controls.
    - B. Burglar Alarm & Protection Devices.
    - C. Combustion & Smoke Control Equipment.
    - D. Fire Prevention Equipment.
    - E. Photo-Electric Control Devices.
    - F. Variable Speed Motor Controlling Equipment.
28. EQUALIZERS.
29. FACSIMILE EQUIPMENT.
30. FILTERS:
    - A. Band Pass.
    - B. Noise Elimination.
    - C. Sound Effect.
31. FREQUENCY MEASURING EQUIPMENT:
    - A. Audio Frequency.
    - B. Primary Standards.
    - C. Radio Frequency.
    - D. Secondary Standards.
32. FREQUENCY MEASURING SERVICES.
33. FUSES & FUSE HOLDERS.

Generators:
- *A. Power: see Motor Generators.*
- *B. Signal: see Frequency Measuring Equipment, also Test Equipment.*

34. GRAPHIC RECORDERS.
35. HARDWARE:
    - A. Binding Posts.
    - B. Bushings.
    - C. Dials & Tuning Controls.
    - D. Flexible Shafts.
    - E. Lugs.
    - F. Screws.
    - G. Springs.
36. INDUCTION HEATING EQUIPMENT.
37. INDUCTORS.
38. INSULATION: (*Also see Ceramics.*)
    - A. Cloth.
    - B. Glass Seals.
    - C. Mica.
    - D. Varnished Cambric.
    - E. Paper.
39. JACKS.
40. KEYS:
    - A. Switching.
    - B. Telegraph.

Knobs, see Moulded Products.

41. LACQUERS:
    - A. Finishing.
    - B. Fungus Proofing.
    - C. Protecting.
    - D. Waterproofing.
42. LOUDSPEAKERS & HEADPHONES.

Lugs, see Hardware.

43. MACHINERY, FIXTURES, & TOOLS FOR RADIO & ELECTRONIC MANUFACTURING.
44. MAGNETS:
    - A. Electro.
    - B. Permanent.

Measuring Equipment, see Test Equipment.

45. METALS:
    - A. Copper.
    - B. Ferrous.
    - C. Non-Ferrous.
    - D. Precious & Rare.
46. METERS:
    - A. Ammeters.
    - B. Frequency Indicating.
    - C. Power Level.
    - D. Vacuum Tube Voltmeters.
    - E. Voltmeters.
    - F. Wattmeters.

Mica, see Insulations.

47. MICROPHONES.

I. R. E. YEARBOOK LISTINGS (*Continued*)

- **48. MONITORING EQUIPMENT:**
  - **A. Frequency.**
  - **B. Modulation.**
- **49. MOTOR-GENERATORS:**
  - **A. Dynamotors.**
  - **B. Motor-Generators.**
  - **C. Rotary-Converters.**
- **50. MOTORS, VERY SMALL.**
- **51. MOULDED PRODUCTS:**
  - **A. Cabinets.**
  - **B. Insulators.**
  - **C. Knobs, etc.**
  - **D. Plastic Parts.**
  - **E. Phenolic Sheet.**
- **51A. OPTICAL SCREENS, MIRRORS AND MATERIALS.**
- **52. OSCILLATORS:**
  - **A. Audio Frequency.**
  - **B. Radio Frequency.**
  - **C. Square Wave Generators.**
- **53. OSCILLOGRAPHS & ACCESSORIES.**
- **54. PANELS.**
- **55. PHONOGRAPH PICK-UPS.**
- **56. PILOT LIGHTS & ASSEMBLIES.**
- **57. PLASTICS:**
  - **A. Raw Materials for Moulding.**
  - **B. Rods.**
  - **C. Sheets.**
- **58. PLUGS.**
- **59. POWER SUPPLIES.**
- **60 PUMPS, VACUUM.**
- **61. RACKS.**
- **62. RADAR.** ***See Also Aircraft & Airport Equipment.***
- **63. RADIO RECEIVERS:**
  - **A. Broadcast.**
  - **B. Communications.**
  - **C. Fixed Frequency.**
  - **D. Frequency Modulation.**
  - **E. Special Purpose.**
  - **F. Television.**
- **64. RECORD CHANGING MECHANISMS.**
- **65. RECORDING EQUIPMENT & SUPPLIES:**
  - **A. Blanks.**
  - **B. Cutting Heads.**
  - **C. Magnetic Wire Recorders.**
  - **D. Needles.**
  - **E. Turntables & Machines.**
- **66. RECORDING SERVICES.**
- **67. RECTIFIERS:**
  - **A. Metallic.**
  - **B. Meter Rectifiers.**
  - **C. Vacuum Tube.** ***Also see Power Supplies.***

Regulators, Voltage, see Voltage Regulators.

- **68. RELAYS:**
  - **A. Keying.**
  - **B. Power.**
  - **C. Stepping.**
  - **D. Telephone Types.**
  - **E. Time Delay.**
  - **F. Vacuum Enclosed.**
- **69. REMOTE CONTROLLING EQUIPMENT.**
- **70. RESISTORS:**
  - **A. Fixed.**
  - **B. Precision.**
  - **C. Vacuum Sealed.**
  - **D. Variable.**
  - **E. Wire Wound.**

Schools, see Technical Schools & Institutes.

Screws, see Hardware.

Shafts, see Hardware.

- **71. SOCKETS:**
  - **A. Receiving Types.**
  - **B. Transmitting Types.**
- **72. SOLDER:**
  - **A. Cored.**
  - **B. Plain.**

Speakers, see Loudspeakers.
Springs, see Hardware.

- **73. SWITCHES:**
  - **A. Circuit Breaking.**
  - **B. Key.**
  - **C. Power.**
  - **D. Receiver Wave Band Changing.**
  - **E. Rotary.**
  - **F. Time Delay.**
  - **G. Transmitter Wave Band Changing.**
- **74. TECHNICAL SHOOLS & INSTITUTES.**
- **75. TESTING & MEASURING EQUIPMENT:**
  - **A. Bridges.**
  - **B. Capacitor Testing Equipment.**
  - **C. Inductance & "Q" Testing Equipment.**
  - **D. Resistance Testing Equipment.**
  - **E. Vacuum Tube Testing Equipment.**
  - **F. Wave Form Analyzers & Distortion Testing Equipment.**
- **76. TRANSCRIPTION LIBRARIES.**
- **77. TRANSFORMERS:**
  - **A. Audio Frequency.**
  - **B. Hermetically Sealed Types.**
  - **C. High Fidelity Audio Types.**
  - **D. Power Components.**
  - **E. Pulse Generating Types.**
  - **F. Radio Frequency.**
- **78. TRANSMITTERS:**
  - **A. Amplitude Modulation.**
  - **B. Communication.**
  - **C. Frequency Modulation.**
  - **D. Policy & Emergency Equipment.**
  - **E. Television.**
  - **F. Ultra-High Frequency.**
- **79. ULTRA-HIGH FREQUENCY ACCESSORY EQUIPMENT:**
  - **A. Antennas & Reflectors.**
  - **B. Measuring & Test Equipment.**
  - **C. Tuning Elements.**
  - **D. Wave Guides.**
- **80. VACUUM TUBES:**
  - **A. Cathode Ray.**
  - **B. Geiger Mueller.**
  - **C. Industrial Types.**
  - **D. Klystrons & Magnetrons.**
  - **E. Receiving Types.**
  - **F. Rectifiers.**
  - **G. Special Purpose & Phototubes.**
  - **H. Television Tubes.**
  - **I. Transmitting types.**
  - **J. Voltage Regulator.**

Varnishes, see Lacquers.

- **81. VIBRATORS, POWER SUPPLY.**
- **82. VOLTAGE REGULATORS:**
  - **A. Automatic.**
  - **B. Manually Controlled.**
- **83. WAXES & SEALING COMPOUNDS.**
- **84. WIRE:**
  - **A. Copper.**
  - **B. Precious Metal.**

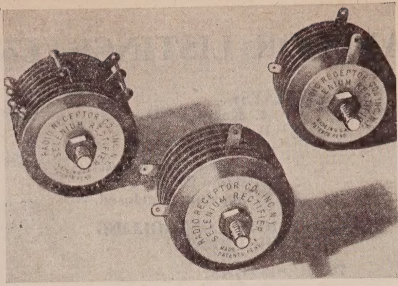
WHERE TO LOOK IT UP

Product information in this Yearbook is grouped in basic engineering classifications. Under each firm, in the alphabetical file, we listed as many products as we were sure would interest engineers, for nearly 3000 companies. (Part II) Use this Alphabetical List to find the line of items made by each firm, and the name of the chief engineer. Listings by Products are given in Part III for our advertisers.

KEY TO INDEXES

Alphabetical Firm Index	1-96A
Index to Advertisers	188A
Index to Product Classes	122A and 174A
Product Classifications	102A
Product Listings start	104A

Part I, IRE Membership
Part II, Companies 1-96A
Part III, Products 101A



Now

OFFERING A COMPLETE LINE OF SELENIUM RECTIFIERS

RADIO RECEPTOR SELENIUM RECTIFIERS ARE:

LIGHTER IN WEIGHT —manufactured from aluminum base plates with metallic selenium coating.

NOISELESS —silent operation no moving parts.

EFFICIENT —when operated at specified rating, R-R Selenium rectifiers give maximum service.

DEPENDABLE —simple, expert construction assures dependability—they require no maintenance and last indefinitely.

SERVICEABLE —Will give d-c output in any desired voltage and current rating.

CAPACITY —Complete units are obtainable in all combinations of current and voltage ratings.

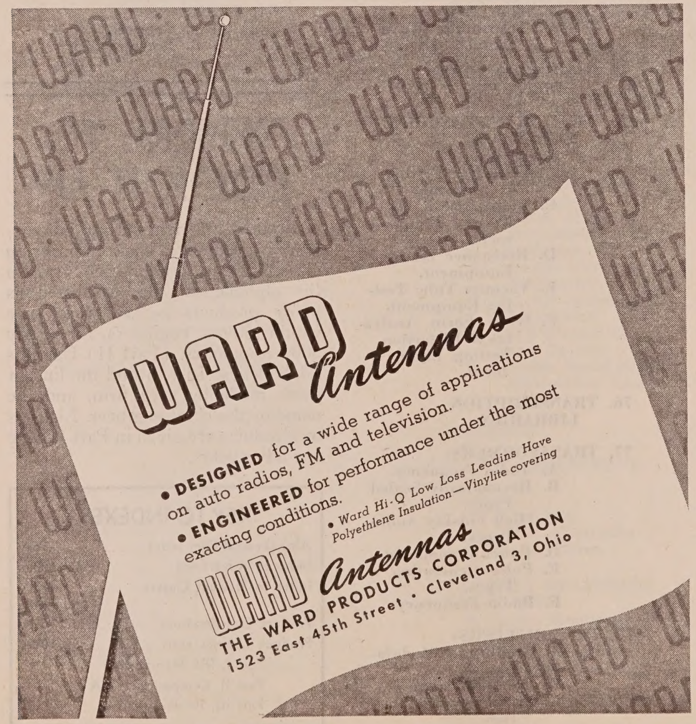
R-R selenium rectifiers are available in six standard sizes, ranging from 1" to 4⅜" diameter. Special sizes and ratings are available on request.

Design engineers are at your service for advice and consultation on every rectifier problem.

"WE SPECIALIZE IN THE DIFFICULT"

ARMY NAVY E

RADIO RECEPTOR COMPANY, Inc.
251 WEST 19th STREET NEW YORK 11, N.Y.
SINCE 1922 IN RADIO AND ELECTRONICS



WARD Antennas

• DESIGNED for a wide range of applications on auto radios, FM and television.

• ENGINEERED for performance under the most exacting conditions.

• Ward Hi-Q Low Loss Leadins Have Polyethlene Insulation—Vinylite covering

WARD Antennas
THE WARD PRODUCTS CORPORATION
1523 East 45th Street • Cleveland 3, Ohio

Product Listing

1. AIRCRAFT & AIRPORT RADIO EQUIPMENT

Aircraft Radio Corp., Boonton, N.J.
See advertisement on page 105-A

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kans.
See advertisement on pages 4, 5-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 185-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y.
See advertisement on page 148-A

Ballantine Labs., Inc., Boonton, N.J.
See advertisement on page 20-A

Boonton Radio Corp., Boonton, N.J.
See advertisement on page 153-A

Collins Radio Co., 855 35th St., S.E., Cedar Rapids, Iowa
See advertisement on pages 53, 54, 55-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y.
See advertisement on page 45-A

Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill.
See advertisement on page 154-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on pages 48, 49-A

Hickok Elec. Inst. Co., 10587 DuPont Ave., Cleveland 8, Ohio
See advertisement on page 56-A

Measurements Corp., 116 Monroe St., Boonton, N.J.
See advertisement on page 159-A

Micro-Ferrocart Prods. Div., Maguire Industries, Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 127-A

Panoramic Radio Corp., 242 W. 55th St., New York 19, N.Y.
See advertisement on page 17-A

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y.
See advertisement on pages 40, 41-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Radio Craft, 25 W. Broadway, New York 7, N.Y.
See advertisement on page 113-A

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N. Y.
See advertisement on page 104-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 121-A

Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y.
See advertisement on page 37-A

Stoddart Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif.
See advertisement on page 173-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill.
See advertisement on page 132-A

(Continued on page 106A)

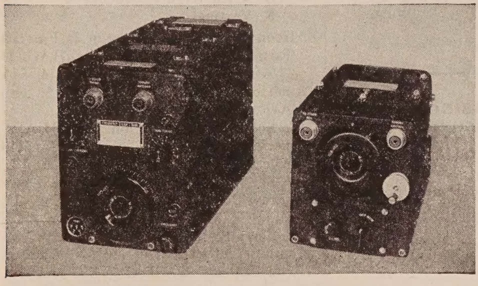
AIRCRAFT RADIO CORPORATION

BOONTON, NEW JERSEY

Designers and Manufacturers of Radio and Electronic Equipment Since 1928

ARC

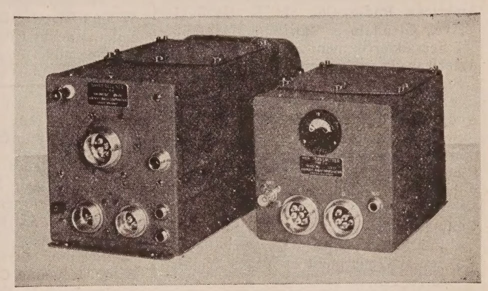
MULTI-CHANNEL AIRCRAFT RADIO RECEIVERS AND TRANSMITTERS



Tunable VHF Receivers and Transmitters, AN/ARC-5

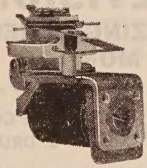
Adapted from the military equipment engineered by Aircraft Radio Corporation for wartime use by Army and Navy, these units have been tested and proved under the most rugged operating conditions and possess the excellence of design and construction that have made ARC receivers and transmitters famous for their dependability, performance and ease of maintenance.

The tunable VHF receivers and transmitters bearing the Army-Navy designation AN/ARC-5 are the latest additions to the ARC line of units covering LF, MF, and HF channels, permitting complete flexibility in providing installations to cover the specific communications requirements of aircraft operators.

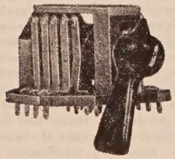


Lightweight VHF Transmitter and LF Range Receiver

In addition to the above equipment, ARC now has available a compact, lightweight combination of LF Range Receiver and VHF 5-channel, crystal controlled transmitter. Weighing less than 14 pounds installed and built to military standards, this provides "system engineered" communication for aircraft of the executive transport type, or for the quality-minded private pilot who requires the best in his radio equipment.



DC Relay by ARC

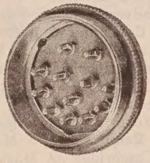


ARC Precision-built Switches

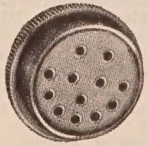
ARC ACCESSORIES AND COMPONENT PARTS

The "Music Box" type switch and the miniature relay illustrated are representative of the precision of workmanship and quality of design that typifies all ARC products. All are tested for performance under the extremes of operating conditions encountered in aircraft.

ARC Ceramic-insulated Multi-contact Plugs and Receptacles provide improved performance and dependability by preventing carbonizing due to flashover. In addition, self-aligning floating female contacts and replaceable pin plugs permit quicker register and engagement and simplify maintenance.



Ceramic-Insulated Multi-Contact Electrical Connectors



A COMPLETE CATALOG OF ARC COMPONENTS IS AVAILABLE INCLUDING:

Various types of switches and relays. Single and multi-contact plugs and mating jacks. Variable and adjustable air condensers for transmitters and receivers. Sealed dry electrolytic and oiled paper condensers. Sealed chokes and transformers. Jacks. Snapslide fasteners. Cranks, levers and knobs.

ENGINEERING SERVICES AND FLIGHT TEST FACILITIES

With the increasing use of electronic devices for the navigation and control of aircraft, ARC has continuously encouraged "systems engineering" of these devices into the basic design of aircraft. ARC offers its 18 years of experience to serve the aviation industry in the design and production of electronic equipment for aircraft.

Operating its own large and small aircraft from its private airport adjacent to the plant, ARC also offers complete facilities for flight testing units or complete systems of electronic equipment. Inquiries are invited.

1. *Aircraft & Airport Radio Equipment*

(Continued from page 104A)

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on pages 42, 43-A
Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.
See advertisement on page 3-A
Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
See advertisement on page 47-A

2. AMPLIFIERS, AUDIO FREQUENCY

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill.
See advertisement on page 134-A
American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 185-A
American Transformer Co., 178 Emmet St., Newark 5, N.J.
See advertisement on page 57-A
Audio Development Co., 2833 13th Ave. So., Minneapolis 7, Minn.
See advertisement on page 178-A
Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A
Collins Radio Co., 855 35th St. S.E., Cedar Rapids, Iowa
See advertisement on pages 53, 54, 55-A
Concord Radio Corp., 901 W. Jackson Blvd., Chicago 7, Ill.
See advertisement on page 135-A
Eastern Amplifier Corp., 794 E. 140th St., New York 54, N.Y.
See advertisement on page 107-A
Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A
Freed Transformer Co., 72 Spring St., New York 12, N.Y.
See advertisement on page 138-A
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.
See advertisement on page 134-A
General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on pages 48, 49-A
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A
The Langevin Co., Inc., 37 W. 65th St., New York 23, N.Y.
See advertisement on page 165-A
Polarad Electronics Co., 135 Liberty St., New York 6, N.Y.
See advertisement on page 156-A
Presto Recording Corp., 242 W. 55th St., New York 19, N.Y.
See advertisement on pages 10, 11, 126-A
Radio Corp of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A
Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y.
See advertisement on page 104-A
Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio
See advertisement on page 150-A
Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on pages 12, 130, 142, 176-A
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 121-A
Sylvania Electric Products, Inc., Emporium, Pennsylvania.
See advertisement on page 89-A
Telequip Radio Co., 1901-1907 S. Washtenaw Ave., Chicago 8, Ill.
See advertisement on page 106-A
United Transformer Corp., 150 Varick St., New York 13, N.Y.
See advertisement on page 23-A
Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill.
See advertisement on page 132-A
Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on page 42, 43-A
Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
See advertisement on page 47-A

3. ANTENNA PHASING EQUIPMENT & ACCESSORIES

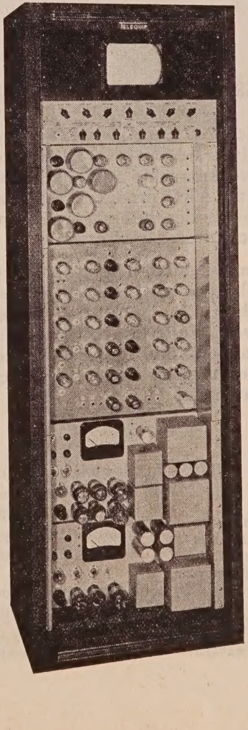
American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 185-A
Andrew Co., 363 E. 75th St., Chicago 19, Ill.
See advertisement on page 110-A
Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio
See advertisement on page 151-A
Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A
Paul Godley Co., 10 Marion Rd., Upper Montclair, N.J.
See advertisement on page 125-A
Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A
Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y.
See advertisement on page 104-A
Stoddart Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif.
See advertisement on page 173-A
Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.
See advertisement on page 3-A

4. ANTENNAS:

- **A. Broadcast**
- **B. Directional**
- **C. Dummy**
- **D. Police**
- **E. Ultra High Frequency**
- **F. Vertical**

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kan. B, C, D
See advertisement on pages 4, 5-A
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill. B, D, E
See advertisement on page 33-A
American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. B, D, E
See advertisement on page 185-A
Andrew Co., 363 E. 75th St., Chicago 19, Ill. B-F
See advertisement on page 110-A
Communication Parts, 1101 N. Paulina St., Chicago 22, Ill. C
See advertisement on page 123-A
Cornish Wire Co., Inc., 15 Park Row, New York 7, N.Y. A
See advertisement on page 114-A
De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y. E, F
See advertisement on page 45-A

(Continued on page 108A)



TELEVISION
SYNCHRONIZING GENERATOR
and MONITOR

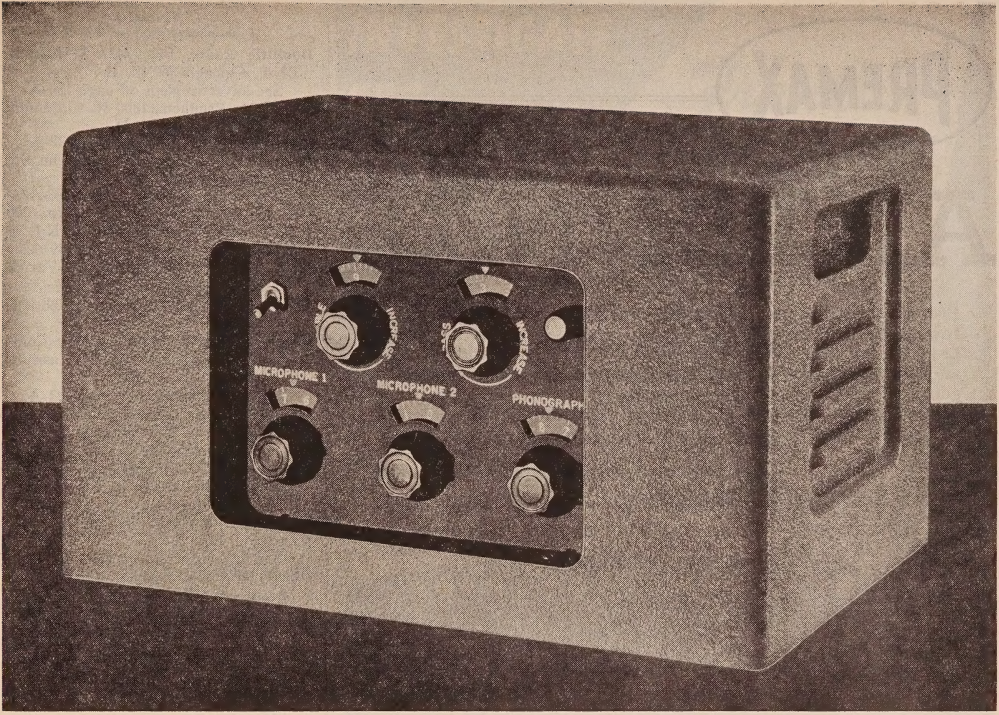
Designed by R. E. DE COLA
W. S. DRUZ

Designed for application in television transmitting plants, and for development research, engineering and production testing in television receiver manufacture. Produces signals having all the necessary synchronizing, blanking and driving pulses required for operation of Iconoscope and Kinoscope units. In substantial agreement with basic FCC-RMA standards. Rack unit includes one Timer Unit, one Shaper Unit, and one Monitoring Oscilloscope (each with electronically regulated power supply). Timer Unit produces the three basic output signals from which all synchronizing pulses are derived. Shaper Unit forms, locates and mixes the required signal by processes of clipping, integrating and differentiating. Monitoring Oscilloscope provides a short 7-inch electrostatic deflection cathode ray tube for display . . .

You are invited to write for a detailed description of the TELEQUIP Synchronizing Generator and Monitor . . . as well as for data covering the TELEQUIP Monoscope Picture Generator and Distribution Unit. For television testing apparatus, look to TELEQUIP, specialists in the design and manufacture of advanced Television Equipment.

TELEQUIP RADIO COMPANY
1901-07 S. Washtenaw Ave. Chicago 8, Ill.

Designers . . . Manufacturers of Television and Communications Equipment . . . Electronic Products


INCREASE
INCREASE
MICROPHONE 1
MICROPHONE 2
PHONOGRAPH

The 1946 Line of
"EASTERN AMPLIFIER" EQUIPMENT
for All Purposes

- ★ AMPLIFIERS
- ★ COMPLETE SOUND SYSTEMS *and Accessories*
- ★ INTERCOMMUNICATION SIGNAL SYSTEMS
- ★ PAGING *and* ANNOUNCING SYSTEMS
- ★ CENTRALIZED SOUND SYSTEMS
- ★ EASTERN HEARING AIDS

Eastern Amplifier Corporation
794 East 140th Street
New York 54, N. Y.

EASTERN AMPLIFIERS

*U.S. Reg'n Applied For

PREMAX

ANTENNAS

Premax pioneered the development of many types of Antennas for commercial and amateur installations and the Premax line today provides both the Tubular Adjustable or Non-Adjustable Styles and the "whip" type for mobile installations. The wide experience gained through designing and building special types for the armed forces now makes available equipment that has met more rigorous tests than any to be found in civilian or commercial fields.

IN STEEL ANTENNAS

Premax Tubular Steel Antennas are made of high-tensile, copper-nickel steel tubing, heavily electro-plated and highly resistant to corrosion. Standard types include adjustable sectional models from 12′ to 33′ in height.

MONEL ANTENNAS

Premmax Monel Antennas are built up of multiple sections of cold-drawn monel tubing, especially designed for Premax. They are available in adjustable and non-adjustable models in various heights.

ALUMINUM ANTENNAS

Premax Aluminum Antennas combine great strength with light weight and are made up of sections of hard-drawn seamless tubing with diameters, gauges and tempers engineered to withstand high wind velocities and shocks.

STAINLESS STEEL ANTENNAS

Premax Stainless Steel Antennas are made from hard-drawn, extremely high-tensile strength tubing which provides extreme rigidity and resistance to fatigue as well as protection against corrosion.

MOBILE POLICE ANTENNAS

Premax Mobile Police Antennas are designed of an extremely high carbon content solid steel, heat-treated and oil-tempered. These Antennas are in wide use for police and public utility mobile units.

ANTENNA MOUNTINGS

Premax Antenna Mountings for Vertical Antennas and mobile installations combine extreme durability and strength with the high resistance so desired in every type of radio installation.

Ask your jobber or send for special bulletins giving complete details of the Antennas and Mountings that you require.

PREMAX PRODUCTS

DIVISION CHISHOLM-RYDER COMPANY, INC.

4136 Highland Ave. **Niagara Falls, N. Y.**

4. Antennas
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Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill. D
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DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill. D
See advertisement on page 27-A

Electrical Reactance Corp., 49 Elm St., Franklinville 3, N.Y. Loop
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Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
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A. W. Franklin Mfg. Corp., 175 Varick St., New York 14, N.Y. A
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General Communication Co., 530 Commonwealth Ave., Boston 15, Mass. B, C, E
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General Electric Co., Electronics Dept., Schenectady 5, N.Y. A, B, D, E
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Paul Godley Co., 10 Marion Rd., Upper Montclair, N.J. A, B, E, F
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Measurements Corp., 116 Monroe St., Boonton, N.J. E
See advertisement on page 159-A

Ohmite Mfg. Co., 4967 W. Flournoy St., Chicago 44, Ill. C
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Premax Products, 4136 Highland Ave., Niagara Falls, N.Y. A, D, F
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Radio Corp. of America, Engineering Products Dept., Camden, N.J. A-F
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Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y. B, E
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Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass. E
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Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio E
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Sylvania Electric Products, Inc., Emporium, Pa. C, E
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Telequip Radio Co., 1901-1907 S. Washtenaw Ave., Chicago 8, Ill. E
See advertisement on page 106-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
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The Ward Prods. Corp. 1523 E. 45th St., Cleveland 3, Ohio D
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Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. D, E, F
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Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A
See advertisement on page 3-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo. E
See advertisement on page 47-A

5. ANTENNA ACCESSORIES

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.
See advertisement on page 33-A

Andrew Co., 363 E. 75th St., Chicago 19, Ill.
See advertisement on page 110-A

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World-Wide B'casting, Hatherly Rd., Scituate, Mass.—10
World Wide Electronics, Inc., 72 E. 13th St., New York 3, N.Y.—27
Worner Electronic Devices, 609 W. Lake St., Chicago 6, Ill. CE—A. E. Eidam—27, 65
Worthington Pump & Machinery Corp., Harrison, N.J.—60
Wright, Inc., 2233 University Ave., St. Paul 4, Minn.—42, 45
Wright Machine Tool Corp., 7 W. 30th St., New York 1, N.Y.—70
W. E. Wright & Sons Co., W. Warren, Mass.—38, 51
Wrought Washer Mfg. Co., 2230 S. Bay St., Milwaukee 7, Wis.—35
Wurlitzer Co., Tonawanda, N.Y.—64
Wynn Mfg. Div., Hudson Supply Co., 401 N. 27th St., Richmond 23, Va.—35, 43
Wynne Precision Co., 114 N. Hill St., Griffin, Ga. CE—E. H. Turner—23
Wyse Labs., 211 S. Ludlow St., Dayton 2, Ohio—21, 49

Xervac Instrument Co., 101 Vine St., Hartford 5, Conn.—75

Yankee Network, Inc., Providence, R.I.—10
Yardney Eng. Co., 105 Chambers St., New York 7, N.Y. CE—Robt. Bernas—24, 27, 69
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York Insulated Wire Wks. Div., Gen'l Electric Co., York, Pa.—84
Yost Superior Co., Springfield, Ohio—35
Young Bros. Co., 6500 Mack Ave., Detroit 7, Mich.—43
Youngstown Pressed Steel Co., Warren, Ohio—22, 45

Zapon Div., Atlas Powder Co., Ludlow St., Stamford, Conn.—41, 83
H. R. Zeamans, 103 Park Ave., New York 17, N.Y.—20
Carl Zeiss, Inc., 485 5th Ave., New York 17, N.Y.—23, 51A
Zell Co., 538 B'way, New York 12, N.Y.—35
Zenith Electric Co., 152 W. Walton St., Chicago 10, Ill.—44, 68, 73
Zenith Optical Lab., 123 W. 64th St., New York 23, N.Y.—43, 51A
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Zenith Prods. Co., West Newton, Mass.—67
Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill. CE—G. E. Gustafson—55, 63
Zierick Mfg. Corp., 385 Gerard Ave., Bronx 51, N.Y.—35
Ziff-Davis Publ. Co., 540 N. Michigan Ave., Chicago 11, Ill.—9
W. Zinsser & Co., Inc., 516 W. 59th St., New York 19, N.Y.—41
Zophar Mills, Inc., 116 26th St., B'klyn 32, N.Y. Tech. Dir.—A. Saunders—83
Paul D. Zottu, 272 Centre St., Newton, Mass.—20
See our advertisement page 126-A

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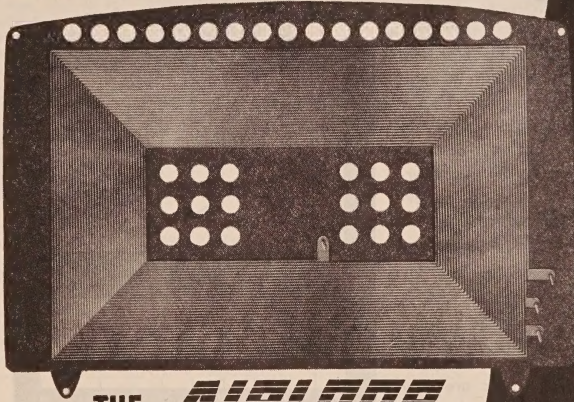

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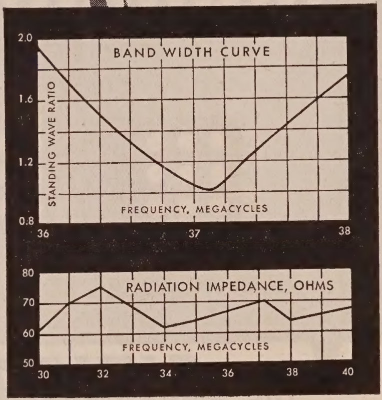

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Used for transmitting and receiving at frequencies from 30 to 40 MC and for powers up to 5,000 watts, this antenna has proved so successful that similar models for higher frequencies are now being designed.

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- Light weight — only 15 pounds — simplifies installation.
- Lightning hazard minimized by grounded vertical element.
- "Slide trombone" calibration permits exact adjustment for any frequency between 30 and 40 MC, using only a wrench. Optimum performance for that frequency is guaranteed without "cut and try" methods.
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- Excellent band width, ideal for FM (see upper curve).

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ANDREW CO.

363 EAST 75th ST., CHICAGO 19, ILL.

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WRITE FOR FULL INFORMATION

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Corning Glass Works, Corning, N.Y.
See advertisement on page 8, 9-A

Cornish Wire Co., Inc., 15 Park Row, New York 7, N.Y.
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De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y.
See advertisement on page 45-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

Graphite Metallizing Corp., 1048 Nepperhan Ave., Yonkers 3, N.Y.
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Pierce Paper Products Corp., 2712 Auburn St., Rockford, Ill.
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Plastoid Corp., 23 W. 44th St., New York 18, N.Y.
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Premax Products, 4136 Highland Ave., Niagara Falls, N.Y.
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Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill.
See advertisement on page 132-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.
See advertisement on page 3-A

6. ATTENUATORS

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio U.H.F. (coax.)
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Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
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Collins Radio Co., 855 35th St. S.E., Cedar Rapids, Iowa
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The Daven Company, 191 Central Ave., Newark 4, N.J.
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General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
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Measurements Corp., 116 Monroe St., Boonton, N.J.
See advertisement on page 159-A

Ohmite Mfg. Co., 4967 W. Flournoy St., Chicago 44, Ill.
See advertisement on page 111-A

Presto Recording Corp., 242 W. 55th St., New York 19, N.Y.
See advertisement on page 10, 11, 126-A

7. BATTERIES

A. Dry "A"
B. Dry "B"
C. Dry Miniature
D. Wet Primary
E. Wet Secondary

National Carbon Co., Inc., 30 E. 42nd St., New York 17, N.Y. A-D
See advertisement on page 91-A

Binding Posts, see Hardware

(Continued on page 112A)

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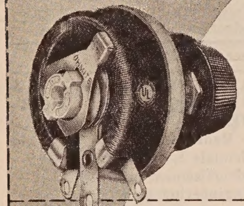

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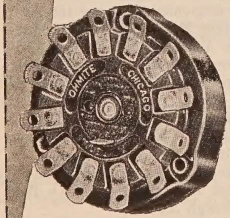

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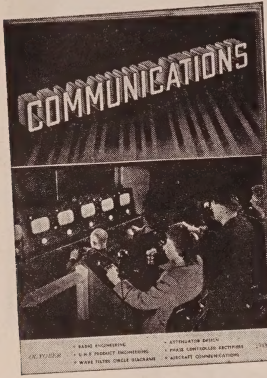

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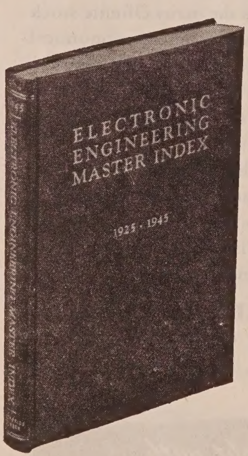

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8. BLOWERS & COOLING FANS

Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill.
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Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.
See advertisement on page 3-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
See advertisement on page 47-A

9. BOOKS & BOOK PUBLISHERS

Bryan Davis Publishing Co., Inc., 52 Vanderbilt Ave., New York 17, N.Y.
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Electronics Research Publ. Co. 2 W. 46th St., New York 19, N.Y. Microfilm Library
See advertisement on page 112-A

The Macmillan Co., 60 Fifth Ave., New York 11, N.Y.
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D. Van Nostrand Co., 250 4th Ave., New York 3, N.Y.
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John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y.
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10. BROADCASTING STATIONS & COMMUNICATIONS COMPANIES

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif.
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Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

Collins Radio Co., 855 35th St. S.E., Cedar Rapids, Iowa
See advertisement on page 53, 54, 55-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

General Electric Co., Electronics Dept., Schencetady 5, N.Y.
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Paul Godley Co., 10 Marion Rd., Upper Montclair, N.J.
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Polarad Electronics Co., 135 Liberty St., New York 6, N.Y.
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Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y.
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Radio Corp. of America, Engineering Products Dept., Camden, N.J.
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Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
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Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.
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Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
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Bushings, see Hardware

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Aireon Mfg. Corp., Funston & Fairfax Rds. Kansas City 15, Kan.
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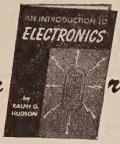
BOOKS

for 

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11. Cabinets
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The Allen D. Cardwell Mfg. Corp., 81 Prospect St., Brooklyn 1, N.Y.
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Hawley Products Co., 333-339 N. 6th St., St. Charles, Ill.
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Par-Metal Products Corp., 32-62 49th St., Long Island City 3, N.Y.
See advertisement on page 166-A

Presto Recording Corp., 242 W. 55th St., New York 19, N.Y.
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Radio Corp. of America, Engineering Products Dept., Camden, N.J.
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Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
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Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill.
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Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
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12. CABLES:

- A. Co-Axial
- B. Microphone
- C. Pre-Formed Harnesses
- D. Shielded
- E. Ultra-High Frequency

Alden Products Co., 117 N. Main St., Brockton 64D, Mass. C, D
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Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. B
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American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill. A-E
See advertisement on page 33-A

Andrew Co., 363 E. 75th St., Chicago 19, Ill. A, E
See advertisement on page 110-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y. B-D
See advertisement on page 148-A

Bird Electronic Corp. 1800 E. 38th St., Cleveland 14, Ohio E U.H.F. Cables, Special for Test Equipment
See advertisement on page 151-A

Cornish Wire Co., Inc., 15 Park Row, New York 7, N.Y. B, D
See advertisement on page 114-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y. A, E
See advertisement on page 45-A

Doolittle Radio, Inc., 7421 S. Loomis Blvd. Chicago 36, Ill. A
See advertisement on page 154-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A, C, E
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General Electric Co., Electronics Dept., Schenectady 5, N.Y. A-E
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Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N.Y.
See advertisement on page 64-A

Lenz Electric Mfg., Co., 1751 N. Western Ave., Chicago 47, Ill.
See advertisement on page 115-A

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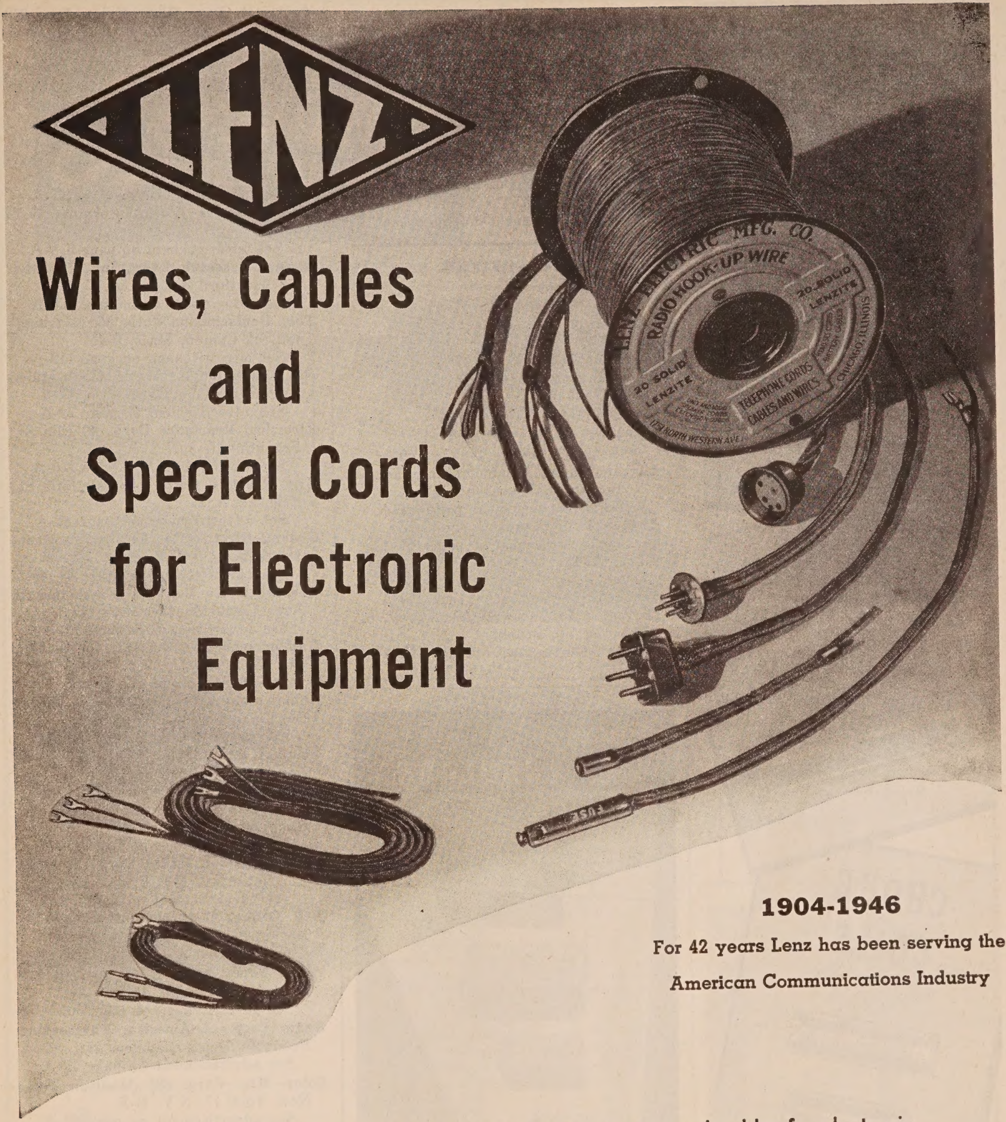
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20 SOLID LENZITE
TELEPHONE CORDS CABLES AND WIRES
CHICAGO, ILLINOIS
1751 NORTH WESTERN AVE
FUSE

Wires, Cables and Special Cords for Electronic Equipment

1904-1946

For 42 years Lenz has been serving the American Communications Industry

Lenz is an organization of specialists in the design of wires and cables for electronic equipment. A pioneer in this field, Lenz's specialized knowledge, based upon more than four decades of experience, is at your disposal for the solution of your wire problems. Lenz manufactures dialite assemblies with a wide variety of standard mounting brackets. Call in a Lenz Wire and Cable Technician. . . . No obligation.

LENZ ELECTRIC MANUFACTURING CO.

1751 North Western Avenue, Chicago 47, Illinois

HOOK-UP WIRES and CABLES—DIAL LIGHT SOCKETS

HI-Q
CERAMIC CAPACITORS
HI-Q
WIRE WOUND RESISTORS
HI-Q
CHOKE COILS

ELECTRICAL REACTANCE CORPORATION
FRANKLINVILLE, N. Y.

12. Cables

(Continued from page 114A)

Radio Corp. of America, Engineering Products Dept., Camden, N.J. A, B, D, E
See advertisement on page 19-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on page 42, 43-A

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13. CAPACITORS; FIXED:

- **A. Ceramic**
- **B. Electrolytic**
- **C. Mica**
- **D. Oil Filled**
- **E. Paper**
- **F. Pressurized Gas**
- **G. Vacuum**

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass. A, B, C, D, E
See advertisement on page 69-A

Aircraft-Marine Products Inc., 1521-73 N. Fourth St., Harrisburg, Pa.
See advertisement on page 141-A

Aircraft Radio Corp., Boonton, N.J. E
See advertisement on page 105-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. B-E
See advertisement on page 134-A

The Allen D. Cardwell Mfg. Corp., 81 Prospect St., Brooklyn 1, N.Y. Air
See advertisement on page 118-A

Nothing but
TUBULARS
J.P. O'Donnell
J.P. O'Donnell
J.P. O'Donnell

Tubular capacitors . . . in all popular styles and ratings . . . are our principal product. We are equipped to furnish you with whatever quantity you need . . . in voltages and capacitances meeting all design requirements . . . and at the right price . . . top quality, of course.

Write, wire, or phone for prices and delivery schedules.

J. P. O'Donnell
AND SONS
316 STUART STREET
BOSTON 16, MASSACHUSETTS

Centralab Div., Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 11, Wis. A, C
See advertisement on page 14, 15-A

Cornell-Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N.J. B, C, D, E
Dykanol Power Factor Capacitors, Carrier Current Coupling Capacitors
See advertisement on page 35-A

Corning Glass Works, Corning, N.Y. D, E
See advertisement on page 8, 9-A

Crystal Research Labs., Inc., 29 Allyn St., Hartford 3, Conn. A, C
See advertisement on page 128-A

Tobe Deutschmann Corp., 863 Washington St., Canton, Mass. B-E
See advertisement on page 119-A

Eitel-McCullough, Inc., 1123 San Mateo Ave., San Bruno, Calif. G
See advertisement on page 75-A

Electrical Reactance Corp., 49 Elm St., Franklinville 3, N.Y. A
See advertisement on page 116-A

Erie Resistor Corp., 640 W. 12th St., Erie, Pa. A, C
See advertisement on page 83-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y. G
See advertisement on page 48, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. C
See advertisement on page 51-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y.
See advertisement on page 65-A

Illinois Condenser Co., 1616 N. Throop St., Chicago 22, Ill. B, D, E
See advertisement on page 56-A

Jennings Radio Mfg. Co., 1098 E. William St., San Jose 12, Calif. G
See advertisement on page 117-A

Measurements Corp. 116 Monroe St., Boonton, N.J. C
See advertisement on page 159-A

National Union Radio Corp., 57 State St., Newark 2, N.J. B, C, D, E
See advertisement on page 59-A

J. P. O'Donnell & Sons, 316 Stuart St,. Boston 16, Mass. D, E
See advertisement on page 116-A

Pierce Paper Products Corp., 2712 Auburn St., Rockford, Ill. E
See advertisement on page 161-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. C
See advertisement on page 19-A

Solar Mfg. Corp. 285 Madison Ave., New York 17, N.Y. B-E
See advertisement on page 85-A

Sprague Electric Co., 189 Beaver St., North Adams, Mass. B-E
See advertisement on page 71-A

Stackpole Carbon Co., Tannery St., St. Mary's 3, Pa.
See advertisement on page 61-A

Sylvania Electric Products, Inc., Emporium, Pa. G
See advertisement on page 89-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. D
See advertisement on page 3-A

(Continued on page 118A)

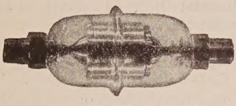
Jennings RADIO
VACUUM ELECTRONIC COMPONENTS

FIXED and VARIABLE HIGH VOLTAGE VACUUM CAPACITORS

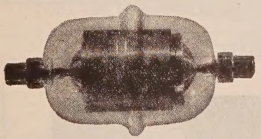
Special Characteristics on a to-order basis

WATCH JENNINGS FOR NEW DEVELOPMENTS IN THE FIELD OF SPECIALIZED VACUUM ELECTRONIC COMPONENTS

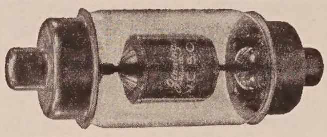
TYPE Y—PINENUT, 1-5 mmfd., 17,000 Peak Volts, 10 Amps. Length 3¼" ± 1/16", Diameter 13/16" ± 1/16"



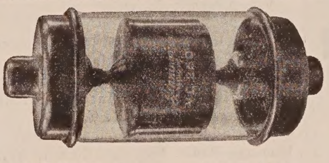
TYPE X—PEANUT, 5-25 mmfd., 17,000 Peak Volts, 20 Amps. Length 3¼" ± 1/16", Diameter 1¼" ± 1/16"



TYPE W—WALNUT, 3 to 100 mmfd. 20,000 Peak Volts (Available up to 32,000 Peak Volts), 20 Amps. Length 4-3/16" ± 1/16", Diameter 2¼" ± 1/16"

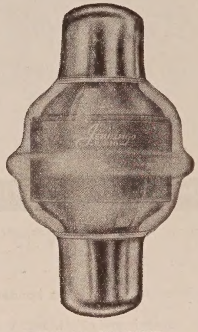


TYPE VC 50, 6-50 mmfd., 20,000 Peak Volts, (available up to 32,000 Peak Volts), 20 Amps. Length 6½", Diameter 2¼"



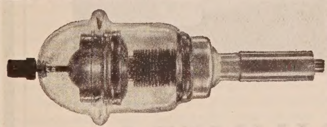
TYPE VC 250, 50-250 mmfd., 20,000 Peak Volts, 60 Amps. Length 6½", Diameter 2½"

TYPE K, 50 mmfd., 50,000 Peak Volts, 60 Amps. Length 8½", Diameter 3"

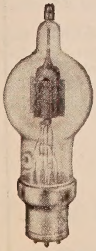


TYPE M—COCONUT, 500 mmfd., 750 mmfd., 1,000 mmfd., 10,000 peak volts; Length 7⅞", Diameter 4⅜"

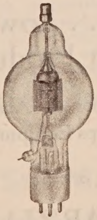
TYPE N—COCONUT, up to 200 mmfd. 35,000 Peak Volts, Dimension same as Type M



TYPE T—VACUUM VARIABLE CAPACITOR
Peak Volts 10,000 and 20,000.
Ranges of 5-25 mmfd.

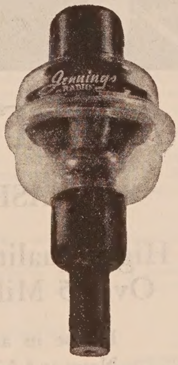


TYPE 250th

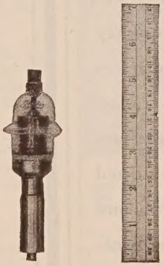


TYPE 100th

Other special types on request
TRANSMITTING and INDUSTRIAL TUBES



TYPE U—VACUUM VARIABLE CAPACITOR
10,000 Peak Volts
Length 11¾", Diameter 4⅜"
250 to 350 mmfd. max.



TYPE R—VARIABLE CAPACITOR
10,000 Peak Volts
Capacity range, 3-8 mmfds.

TYPE S—SPLIT STATOR VARIABLE CAPACITOR
15,000 and 30,000 Peak Volts.
Capacity range, 7-15 mmfds.

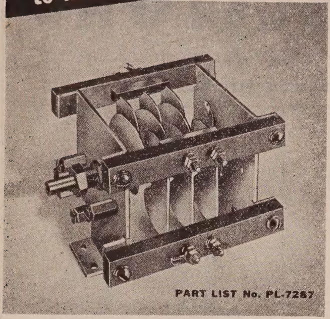
Special capacities on a to-order basis.

WRITE FOR BULLETIN IR

JENNINGS RADIO MANUFACTURING COMPANY

1098 EAST WILLIAM STREET, SAN JOSE 12, CALIFORNIA

EXAMPLE OF
ENGINEERING FLEXIBILITY
to meet a specific need



GENERAL CHARACTERISTICS

Capacity Range: 12-6 mmfds. per section.
Airgap: .218"
Insulation: MYCROY (glass bonded mica).
Size: Approximately 3" H x 3½" W x 3¾" L.
Material: All aluminum except steel shaft, brass bearings, stator blocks, studs and screws.
Bearings: Ball thrust rear—straight shoulder bearing in front.
Mounting: Foot mounting to chassis or three point to panel.

THIS grid balancing condenser was specially designed for Frequency Modulation Radio Transmitters operating in the 100 M. C. range. This is just one of many examples of how Cardwell has developed condensers to meet specific problems. If you have a tough condenser problem, consult Cardwell engineers.

THE ALLEN D. CARDWELL MFG. CORP.
Main Office: 81 Prospect Street,
Brooklyn 1, N. Y.
Factories: Plainville, Conn.—Brooklyn, N. Y.

(Continued from page 116A)

14. CAPACITORS; VARIABLE:
- **A. Neutralizing**
- **B. Precision**
- **C. Temperature-Frequency Compensating**
- **D. Trimmer**
- **E. Tuning**
- **F. Vacuum**

Aircraft Radio Corp., Boonton, N. J. E
See advertisement on page 105-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. E
See advertisement on page 134-A

The Allen D. Cardwell Mfg. Corp. 81 Prospect St., Brooklyn 1, N.Y. E
See advertisement on page 118-A

Cornell-Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N.J. C
See advertisement on page 35-A

Crystal Research Labs., Inc., 29 Allyn St., Hartford 3, Conn. C
See advertisement on page 128-A

DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill.
See advertisement on page 27-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. E
See advertisement on page 51-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y. C, E
See advertisement on page 65-A

Jennings Radio Mfg. Co., 1098 E. William St., San Jose 12, Calif.
See advertisement on page 117-A

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N.Y. E
See advertisement on page 64-A

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y. E
See advertisement on page 40, 41-A

Sarkes Tarzian, 537 S. Walnut St., Bloomington, Ind. E
See advertisement on page 118-A

15. CERAMICS:
- **A. Coil Forms**
- **B. Ground Mica**
- **C. Rods**
- **D. Sheets**

Alden Products Co., 117 N. Main St., Brockton 64D, Mass. A
See advertisement on page 175-A

American Lava Corp., Chattanooga 5, Tenn. A, C
See advertisement on page 7-A

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill. A
See advertisement on page 33-A

Centralab, Div. Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 11, Wis. A
See advertisement on page 14, 15-A

Continental-Diamond Fibre Co., 16 Chapel St., Newark 48, Del. A
See advertisement on page 147-A

Corning Glass Works, Corning, N.Y. A, C, D
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General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

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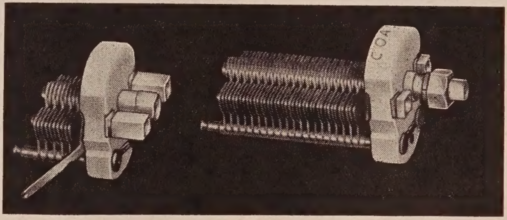

AIR TRIMMERS
★ ★ ASP TYPE ★ ★

High Quality . . . Low Cost
Over 5 Million Produced!

In use in all types of Army,
Navy and Air Corps Equipment

Write, phone or wire

SARKES TARZIAN
BLOOMINGTON, INDIANA

CAPACITORS

TOBE
TOBE
TOBE
2 MFD.
600 V.D.C.
TOBE
0.25 MFD.
200 V.D.C.
TOBE
.1-.1-.1 MFD.
400 V.D.C.
TOBE
0.1 MFD.
600 V.D.C.
TOBE
0.25 MFD. 600 V.D.C.
TOBE
0.1 MFD.
600 V.D.C.

For Every Service

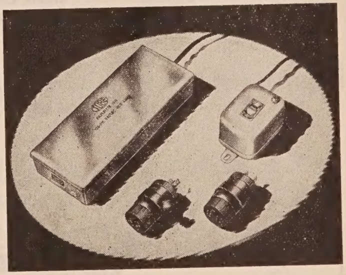
MOLDED OIL-PAPER . . . in standard popular sizes; 120 to 1600 volts d-c; .001 to .25 mfd.; non-inductive windings, oil-impregnated and molded in mica-filled phenolic cases; low power factor; high insulation resistance; satisfactory through wide range of frequency and temperature; recommended where better than paper-tubular performance is required.

METAL-CASED . . . for filter and by-pass service where long life is essential; extended-foil windings, impregnated with mineral oil and hermetically sealed in seamless metal cases; varied styles, mountings, and terminals meet all war standards requirements; high resistance; low power factor; temperature range minus 67 to plus 185 F.

A-C TYPES . . . for motor starting, power factor correction, and fluorescent lamp service; careful design gives all the advantages of mineral oil impregnation in compact, hermetically sealed metal cases meeting all requirements; long life at temperatures up to 75 C.

HIGH VOLTAGE . . . for transmitting, filter, and timing circuits where sustained high voltages and sharp transients may be met; extended-foil windings in hermetically sealed steel cases; terminal structures have long leakage path to ground; wide range of sizes, shapes, and mountings; mineral oil impregnation for stability through wide temperature range.

Write for free catalog 46-E



FILTERETTES

The quick, positive answer to any radio noise problem . . . made by the originators of the vehicular noise suppression system used by the U. S. Army . . . specialists in elimination of radio interference since 1920 . . . fully equipped laboratory ready to serve you. Write for details.

TOBE DEUTSCHMANN CORPORATION

CANTON MASSACHUSETTS

MADISON ELECTRICAL PRODUCTS CORP.
MEPCO
ELECTRIC-RADIO-ELECTRONICS

"TRU-TOLERANCE" PRECISION WIRE-WOUND RESISTORS

—containing so many improvements that they jumped from the status of a new product to the world's most widely accepted Precision Resistors in a matter of months. Their excellent frequency characteristics make them exceptionally well fitted for audio frequency, and up to 50 K.C. radio frequency circuits. Lug, wire, strap or binding post types. Non-inductive or inductive. Special tolerances, ratings and ranges to order.

MEPCO I. F. AND R. F. TRANSFORMERS, COILS TO ALL SPECIFICATIONS

High grade components for A.M. and F.M. circuits. "High-Q", high gain tuned Preselector and Oscillator combinations and I.F.'s—permanent stability—to specification.

SPECIAL ELECTRONIC EQUIPMENT TO ORDER

"HIGH-Q" ANTENNA COIL
Manufactured by new MEPCO process—achieving a "Q" as high as 300.

TRIMMERS & PADDERS

METER MULTIPLIERS
"Tru-Tolerance" Precision units, mounted on special core which permits replacing of any unit at any time.

1946 16-PAGE CATALOG
MEPCO "TRU-TOLERANCE"—PRECISION RESISTORS

MADISON
ELECTRICAL
PRODUCTS CORP.
82 Main St., Madison, N. J.

I'd like a copy of your new catalog.

NAME
TITLE
COMPANY
ADDRESS

MADISON ELECTRIC PRODUCTS CORPORATION
MADISON NEW JERSEY

15. *Ceramics*
(Continued from page 118A)

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y.
See advertisement on page 65-A

Mycalex Corp. of America, 60 Clifton Blvd., Clifton, N.J. B-D
See advertisement on page 13-A

Pierce Paper Products Corp., 2712 Auburn St., Rockford, Ill. A
See advertisement on page 161-A

Premier Crystal Labs., 51 Park Row, New York 7, N.Y. D
See advertisement on page 129-A

Stupakoff Ceramic & Mfg. Co., Box 390, Latrobe, Pa. A, C
See advertisement on page 63-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. B
See advertisement on page 3-A

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16. CHASSIS

Par-Metal Products Corp., 32-62 49th St., Long Island City 3, N.Y.
See advertisement on page 166-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on page 12-A, 130-A, 142-A, 176-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
See advertisement on page 47-A

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17. CHOKE COILS:
A. Audio Frequency
B. Power
C. Radio Frequency

The Acme Electric & Mfg. Co., 44 Water St., Cuba, N.Y. A-C
See advertisement on page 18-A

Aircraft Radio Corp., Boonton, N.J. A, C
See advertisement on page 105-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A-C
See advertisement on page 134-A

American Transformer Co., 178 Emmet St., Newark 5, N.J. A-C
See advertisement on page 57-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. A, B
See advertisement on page 178-A

Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill. A, B
See advertisement on page 180-A

Communication Parts, 1101 N. Paulina St., Chicago 22, Ill. A, C
See advertisement on page 123-A

Dinion Coil Co., Inc., Caledonia, N.Y. A, B
See advertisement on page 122-A

DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill.
See advertisement on page 27-A

Electrical Reactance Corp., 49 Elm St., Franklinville 3, N.Y. C
See advertisement on page 116-A

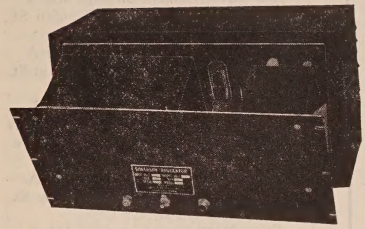
Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A, B
See advertisement on page 39-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y. A, B
See advertisement on page 138-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. C
See advertisement on page 51-A

(Continued on page 122A)

A. C. Voltage REGULATION *and* CONTROL *by Sorensen*



MODEL 1000

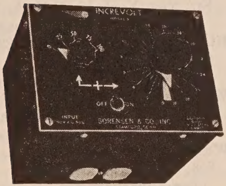
(illustrated)

Load Range	200 to 1000 V.A.
Panel Size	19″ x 8¾″
Cabinet Size	19¼″ x 10″ x 11⅞″
Ship Wt.	60 lbs.

REGULATION

Automatic—Electronic A.C. Voltage Stabilizers

- Wave Form Distortion Minimum, averages less than 5% (Special models available with overall distortion less than 2% guaranteed.)
- Output Voltage Constant to within ± 0.2%, with input variations 95 to 130 volts.
- Not affected by Frequency Variations 50 to 70 cycles.
- Independent of Load Power Factor.
- Not affected by Variations in Load—output voltage maintained to within ±0.2% despite variations in load over entire rated range of unit.



MODEL 5

(illustrated)

Size	7⅝″ x 6⅜″ x 5⅝″ *deep*
Ship wt.	14 lbs.

Dual outlet receptacle, on-off switch, easy to read etched dial plate.

CONTROL

The INCREVOLT—accurate Manual Control of Line Voltage

- Any Output Voltage from 0 to 130 available—*in increments of .1 volt*—with 115 volts input.
- Available in Two Sizes: 5 amperes and 15 amperes, both protected by built-in automatic "Klixon" thermal overload breaker—assurance that overloads or short circuits will not damage unit.

Write the factory for price and delivery information or our representative nearest you.

West Coast
Norman B. Neely Enterprises
7422 Melrose Avenue
Hollywood, California

Middle West
Alfred Crossley & Assoc.
549 W. Randolph St.
Chicago, Illinois

East Coast
Burlingame Assoc. Ltd.
11 Park Place
New York, N.Y.

New England
Irving I. Kahn Co.
3324 Main St.
Hartford, Conn.

SORENSEN & COMPANY, INC.

375 Fairfield Avenue
STAMFORD, CONNECTICUT

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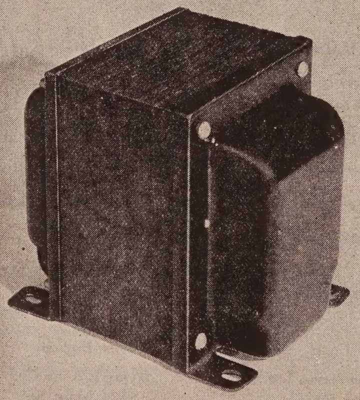
83	Waxes & Sealing Compounds	186A
84	Wire, Copper & Precious Metal	186A



For COMMUNICATIONS and INDUSTRIAL Jobs

Power Transformers (Up to 1 kw.)

Audio Transformers

High-Voltage Transformers

Filter Chokes

Coils

DINION COIL COMPANY, Inc.

CALEDONIA, N. Y.

Specialists in Difficult Designs

17. Choke Coils

(Continued from page 120A)

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y. C
See advertisement on page 65-A

Inductive Equipment Corp., Quarry Park, Gettysburg, Pa. A, B, C
See advertisement on page 58-A

Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N.Y. A, B
See advertisement on page 181-A

The Langevin Co., Inc., 37 W. 65th St., New York 23, N.Y. A, B
See advertisement on page 165-A

Madison Elec. Prods. Corp., 78 Main St., Madison 3, N.J. A, C
See advertisement on page 120-A

Micro-Ferrocart Prods. Div., Maguire Industries, Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 127-A

Ohmite Mfg. Co., 4967 W. Flournoy St., Chicago 44, Ill. B, C
See advertisement on page 111-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass. A, B
See advertisement on page 81-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. A, B
See advertisement on page 121-A

Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill. A, B
See advertisement on page 87-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

United Transformer Corp., 150 Varick St., New York 13, N.Y. A, B
See advertisement on page 23-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill. A, B
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A
See advertisement on page 3-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo. C
See advertisement on page 47-A

Coil Forms, see Ceramics

18. COILS

The Acme Electric & Mfg. Co., 44 Water St., Cuba, N.Y.
See advertisement on page 18-A

Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

Communication Parts, 1101 N. Paulina St., Chicago 22, Ill.
See advertisement on page 123-A

Dinion Coil Co., Inc., Caledonia, N.Y.
See advertisement on page 122-A

DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill.
See advertisement on page 27-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y.
See advertisement on page 65-A

Inductive Equipment Corp., Quarry Park, Gettysburg, Pa.
See advertisement on page 58-A

(Continued on page 123A)

WHERE TO LOOK IT UP

Product information in this Yearbook is grouped in basic engineering classifications. Under each firm, in the alphabetical file, we listed as many products as we were sure would interest engineers, for nearly 3000 companies. (Part II) Use this Alphabetical List to find the line of items made by each firm, and the name of the chief engineer. Listings by Products are given in Part III for our advertisers.

KEY TO INDEXES

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Index to Advertisers 188A
Index to Product Classes ....122A and 174A
Product Classifications 102A
Product Listings start 104A
Part I, IRE Membership
Part II, Companies 1-96A
Part III, Products 101A

18. Coils

(Continued from page 122A)

Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N.Y.
See advertisement on page 181-A

The Langevin Co., Inc., 37 W. 65th St., New York 23, N.Y.
See advertisement on page 165-A

Madison Elec. Prods. Corp., 78 Main St., Madison 3, N.J.
See advertisement on page 120-A

Micro-Ferrocart Prods. Div., Maguire Industries, Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 127-A

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y.
See advertisement on page 40-A, 41-A

United Transformer Corp., 150 Varick St., New York 13, N.Y.
See advertisement on page 23-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Condensers, see Capacitors

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19. CONNECTORS

Aircraft-Marine Products Inc., 1521-73 N. Fourth St., Harrisburg, Pa.
See advertisement on page 141-A

Aircraft Radio Corp., Boonton, N.J.
See advertisement on page 105-A

Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.
See advertisement on page 33-A

The Astatic Corp., P.O. Box 120, Conneaut, Ohio
See advertisement on page 79-A

(Continued on page 124A)

EXPERT HELP
Now Available To You
TO ASSIST YOU WITH YOUR PROBLEMS OF
DESIGN
ENGINEERING
PRODUCTION
AS WELL AS THE MANUFACTURE OF ALL TYPES OF PARTS IN THE FIELDS OF
RADIO and ELECTRONICS

WE MANUFACTURE
Radio coils
Solenoids
Bank-wound
Universal
Universal progressive
Paper section
Layer-wound
Toroids

From the middle of the voice frequency to ultra-high frequency. Electronic and radio equipment of all kinds.

WE HAVE EQUIPMENT
FOR ANY TYPE OF TREATMENT:
Hermetic
Wax
Varnish-impregnating
Baking, vacuum-impregnating
Oil filling

We have a completely equipped laboratory with Q meters, twin-"T" bridges and special bridges . . . for frequency analyzing and prime standard of frequency.

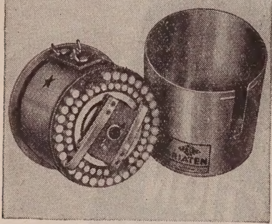
ALSO
We are equipped for turning out special sub-assembly work . . . work on complete units where allied to our various facilities as well as small punch press work . . . lugging and terminal assembly . . . soldering, testing . . . original design and product design.

We invite you to consult with us without obligation.

COMMUNICATION PARTS
NOT INC.
1101 NORTH PAULINA ST. • CHICAGO 22, ILLINOIS

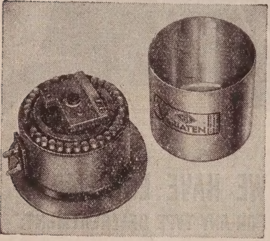
FLAT Contacts

reduce noise, prolong service life



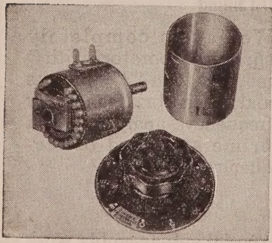
VARIATEN #1218

"T" Circuit—1½ db per step; 30 to 600 ohms impedance. Price, F.O.B...$17.50



VARIATEN #1156

Ladder Circuit—1½ db per step; 30 to 600 ohms impedance. Price, F.O.B...$12.50



VARIATEN #1384

Ladder Circuit—2⅓ db per step; 30 to 600 ohms impedance. Price, F.O.B...$7.50

VARIATEN contacts and brush surfaces make contact over their entire area because the contacts are ground flat and the brushes stone-lapped, *not* buffed. Buffing produces rounded surfaces and therefore a "point" contact highly susceptible to noise. Variaten brushes move from one contact to the next without rocking motion. The resulting perpendicular spring pressure at all positions allows us to take advantage of the natural resiliency of metals to provide a completely flat contact over the entire brush surface at all times and so reduce noise and lengthen service life.

No carbon resistors are used in any Variaten Mixer...
All are of stable, wire-wound construction. Most are step type. Where quiet operation is the major consideration, we recommend ladder type mixers because the circuit requires only one contact brush operation on the input side of the circuit and any possible brush noise is therefore attenuated along with the signal.

By all means compare circuits, construction and features of these mixers. From the hundreds of Variaten attenuators you may select the attenuators best adapted to your specific needs. Write for the Variaten Catalog today.

VARIATEN

CINEMA ENGINEERING CO.

Established 1935 • Burbank • California

19. Connectors
(Continued from page 123A)

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio Special coax. (U.H.F.)
See advertisement on page 151-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y.
See advertisement on page 45-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N.Y.
See advertisement on page 64-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Consoles, see Amplifiers

20. CONSULTING ENGINEERS:

A. Acoustic
B. Electrical
C. Mechanical
D. Radio

Alden Products Co., 117 N. Main St., Brockton 64D, Mass. D
See advertisement on page 175-A

Andrew Co., 363 E. 75th St., Chicago 19, Ill. D
See advertisement on page 110-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. A-C
See advertisement on page 178-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y. A-C
See advertisement on page 148-A

Ballantine Labs., Inc., Boonton, N.J. A, B, D
See advertisement on page 20-A

Alfred W. Barber Labs., 34-04 Francis Lewis Blvd., Flushing, N.Y.
See advertisement on page 152-A

W. J. Brown, 1420 E. 25th St., Cleveland 14, Ohio D

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif. A-C
See advertisement on page 124-A

Concord Radio Corp., 901 W. Jackson Blvd., Chicago 7, Ill. D
See advertisement on page 135-A

Edward J. Content, Roxbury Rd., Stamford, Conn, A, E (Audio Systems)
See advertisement on page 126-A

Crystal Research Labs., Inc., 29 Allyn St., Hartford 3, Conn.
See advertisement on page 128-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y. B
See Advertisement on page 45-A

Richard A. Dinzl, 648 Nottingham Pl., Westfield, N.J.
See advertisement on page 126-A

Stanley D. Eilenberger, 6309-13 27th Ave., Kenosha, Wis. A, B, D
See advertisement on page 126-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif. A, B, D
See advertisement on page 126-A

Electronic Measurements Co., Red Bank, N.J. B, D
See advertisement on page 164-A

F. T. Fisher's Sons, Ltd., 1425 Dorchester St. W., Montreal, Canada D

Paul Godley Co., 10 Marion Rd., Upper Montclair, N.J. D
See advertisement on page 125-A

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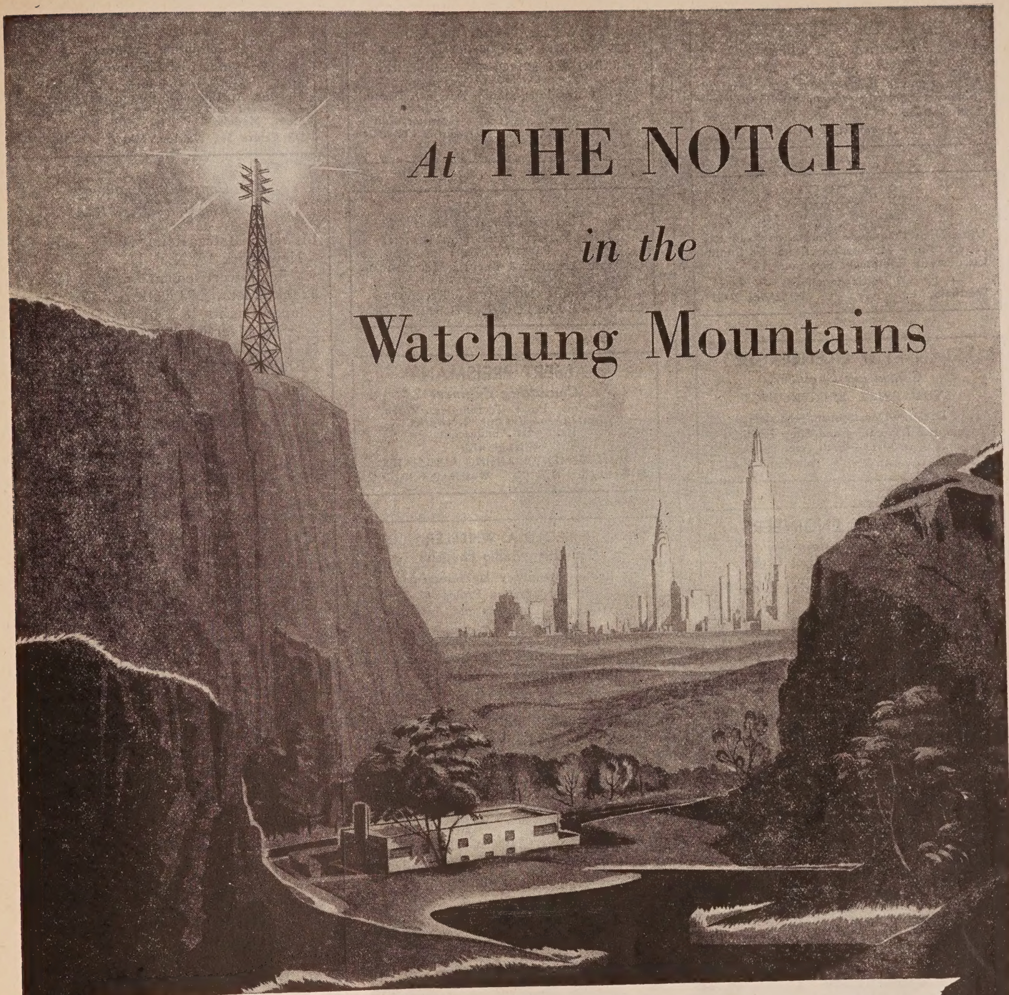
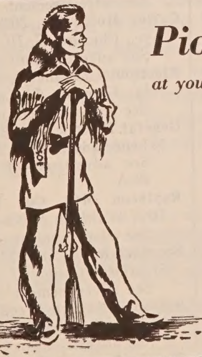

At THE NOTCH
in the
Watchung Mountains



Pioneers . . . *More than a century of Professional Experience at your service. Here IMAGINATION guides and INTEGRITY governs.*

PAUL GODLEY CO.

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Broadcasting • Electronics • Communications

Laboratory: Great Notch, N. J. *Office: Upper Montclair, N. J.*

Phones: LITTLE FALLS 4-1000 MONTCLAIR 2-7859

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Audio Systems Engineering, FM Standard Broadcast and Television Studio Design.
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Stamford, Conn.

R. A. DINZL
Electronic Consultant
Ultra High Frequency Transmitters and Receivers, Pulse Modulation, Broadcast Studio Circuits and Equipment Selection.
648 Nottingham Place
Westfield, N.J. Telephone 2-4539

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Design—Development—Models
Complete Laboratory and Shop Facilities
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Kenosha, Wis. Telephone 2-4213

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- Radio Equipment to Order
- Industrial Electronic Devices to Order
- Broadcast Station Allocation

Complete Development and Laboratory Facilities
Phone CItrus 1-6884
611 E. Garfield Ave. Glendale 5, Calif.

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30 West 58th Street, New York 19, N.Y.
RADIO & ELECTRONIC ENGINEERING CONSULTANT
FM-AM Broadcast Station Design & Layout. Full Range High Fidelity Audio Systems, Precision Receivers, Test & Monitor Equipment, Special Apparatus Design & Construction.

FRANK MASSA
Electro-Acoustic Consultant
DEVELOPMENT PRODUCTION DESIGN
PATENT ADVISOR
ELECTRO-ACOUSTIC & ELECTRO-MECHANICAL VIBRATING SYSTEMS
SUPERSONIC GENERATORS & RECEIVERS
3393 Dellwood Rd., Cleveland Heights 18, Ohio

ALBERT PREISMAN
Consulting Engineer
Television, Pulse Techniques, Video Amplifiers, Phasing Networks, Industrial Applications
Affiliated with
MANAGEMENT TRAINING ASSOCIATES
3308-14th St., N.W. Washington 10, D.C.

HAROLD A. WHEELER
Consulting Radio Physicist
Radio-Frequency Measurements
Special Antenna Problems
Wideband Amplifiers and Filters
259-09 Northern Boulevard
Great Neck, New York Imperial 645

POWDERED METAL CORES
PyroFerric's
EXCLUSIVE SPECIALTY

Since 1936, we of the Pyroferric Company have devoted ourselves exclusively to the art of manufacturing powdered metal cores . . . at no time have we been affiliated with other enterprises such as radio set manufacturing, coil winding, etc.

Today our policy is the same as always; to manufacture the best of our unique type of product and to serve all of the radio business without preference or partiality.

PYROFERRIC means specification powdered metal cores.

PYROFERRIC Co.
175 VARICK ST. NEW YORK 14, N. Y.

Paul D. Zottu
Consulting Engineer
Industrial Electronics
High Frequency Dielectric and Induction Heating Applications, Equipment Selection, Equipment and Component Design, Development, Models.
272 Centre St., Newton, Mass. BIG-9240

20. Consulting Engineers

(Continued from page 124A)

Llewelyn Bates Keim, 30 W. 58th St., New York 19, N.Y. D
See advertisement on page 126-A

Frank Massa, 3393 Dellwood Rd., Cleveland Heights 18, Ohio A, D
See advertisement on page 126-A

M. F. M. Osborne Associates, 703 Albee Bldg., Washington 5, D.C. A, D

Polarad Electronics Co., 135 Liberty St., New York 6, N.Y. D
See advertisement on page 156-A

Albert Preisman, Management Training Assoc., 3308-14th St. N.W., Washington 10, D.C. D
See advertisement on page 126-A

Presto Recording Corp., 242 W. 55th St., New York 19, N.Y. A
See advertisement on page 10-A, 11-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y. D
See advertisement on page 12-A, 130-A, 142-A, 176-A

Stavid Engineering, Inc., 40 Somerset St., Plainfield, N.J. B
See advertisement on page 128-A

Harold A. Wheeler, 259-09 Northern Blvd., Great Neck, L.I., N.Y. D
See advertisement on page 126-A

Paul D. Zottu, 272 Centre St., Newton, Mass. E Industrial Electronics
See advertisement on page 126-A

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21. CONVERTERS:

A. Frequency
B. Rotary: see Motor Generators
C. Vibrator

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A, B
See advertisement on page 134-A

Carter Motor Co., 2638 N. Maplewood Ave., Chicago 47, Ill. B
See advertisement on page 182-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif. A
See advertisement on page 126-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y. A-C
See advertisement on page 48-A, 49-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass. A
See advertisement on page 81-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. A
See advertisement on page 121-A

Sylvania Electric Products, Inc., Emporium, Pennsylvania A
See advertisement on page 89-A

Walker-Jimieson Inc., 311 S. Western Ave. Chicago 12, Ill. Dealer
See advertisement on page 132-A

(Continued on page 128A)

ELECTRONIC AND MECHANICAL POWDER METALLURGY

IN the twin fields of electronic and mechanical powder metallurgy, where close attention to dimensional tolerance, porosity, density control, etc., is a production "must", Micro-Ferrocart's reputation for strict adherence to such requirements is well established.

•Typical examples of this attention to "quality in production", are the Radacor Iron Cores shown here. Precision-made, subjected to rigorous tests, they are designed for use at all frequencies in television and FM.

•If you contemplate the manufacture of a product requiring electronic or mechanical powder metallurgy parts, designed to close tolerances and of specific densities, why not outline your problems in a letter to us today. Our mechanical powder metallurgy parts replace those heretofore requiring much expensive milling and machining. Our complete engineering and plant facilities are at your disposal.

Meissner
FERROCART
16-5740

The Radacor Iron Core used in this Meissner I. F. Transformer permits higher "Q" with a resultant increase in selectivity and gain.

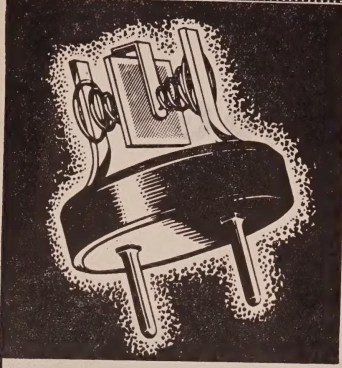
ELECTRONIC & MECHANICAL POWDER METALLURGY

MICRO-FERROCART PRODUCTS DIVISION

MAGUIRE INDUSTRIES, INCORPORATED

375 FAIRFIELD AVENUE, STAMFORD, CONN.

Specialists in Special Crystals



100 KC FREQUENCY STANDARD CRYSTAL

. . . Designed to withstand severe shock and vibration. A crystal so precisely finished that it has less than 15 cycles drift from -50C to +85C*. (If oscillator or circuit is furnished, an accuracy of 3-5 cycles can be obtained)

A special solder bead supports a tensile load of 9,000 lbs. per square inch. Crystalab engineered to meet the most rigid operating requirements.

*Also available in frequencies from 80.86 to 200 KC.

Yankee Ingenuity makes us

SPECIALISTS IN SPECIAL CRYSTALS

Write Dept. I.R. for comprehensive catalog.

ARMY E NAVY

CRYSTAL RESEARCH LABORATORIES

INCORPORATED

LABORATORIES AND MAIN OFFICE: 29 ALLYN STREET, HARTFORD 3, CONN

New York Office: 15 E. 26th Street, New York 10, N. Y. Phone MU 5-2952

an Invitation to Peacetime Product Planners from the Valpey Crystal Corporation

Let Valpey Engineers help you plan the "heartbeat" of the postwar product

Insure the success of your future products by planning to use Valpey Crystals in every "Vital Spot." Valpey's never vary.

VALPEY CRYSTAL CORP.

HOLLISTON MASSACHUSETTS

CUSTOM DESIGNED ELECTRONIC EQUIPMENT

If your requirements call for a special design of electronic equipment, including radio and industrial control, we are equipped to serve you.

- RESEARCH
- DEVELOPMENT
- PRODUCT DESIGN
- MODEL CONSTRUCTION
- MANUFACTURING DRAWINGS

STAVID ENGINEERING

Incorporated

40 Somerset Street

Plainfield, N.J.

(Continued from page 126A)

22. CORE MATERIALS:

A. Complete Cores
B. Lamination
C. Powdered Iron

A. W. Franklin Mfg. Corp., 175 Varick St., New York 14, N.Y. C
See advertisement on page 109-A, 175-A

General Aniline & Film Corp., Hotel Marguery, 270 Park Ave., New York 17, N.Y.
See advertisement on page 77-A

Micro-Ferrocart Prods. Div., Maguire Industries, Inc., 375 Fairfield Ave., Stamford, Conn. B, C
See advertisement on page 127-A

Pyroferric Co., 175 Varick St., New York 14, N.Y. C
See advertisement on page 126-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. A
See advertisement on page 121-A

Stackpole Carbon Co., Tannery St., St. Mary's 3, Pa. C
See advertisement on page 61-A

Webster-Chicago Corp. 5610 Bloomingdale Ave., Chicago 39, Ill. B
See advertisement on page 170-A

23. CRYSTALS:

A. Oscillating Quartz
B. Piezo-Electric
C. Rectifier

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kan. A, B
See advertisement on page 4-A, 5-A

The Astatic Corp., P.O. Box 120, Conneaut, Ohio
See advertisement on page 79-A

Bliley Electric Co., 227 Union Station Bldg., Erie, Pa. A, B
See advertisement on page 97-A, 100-A

Cambridge Themionic Corp., 456 Concord Ave., Cambridge 38, Mass. A, B
See advertisement on page 21-A

Crystal Research Labs., Inc., 29 Allyn St., Hartford 3, Conn. A, B
See advertisement on page 128-A

DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill. A
See advertisement on page 27-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A
See advertisement on page 39-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. A
See advertisement on page 51-A

Premier Crystal Labs., 51 Park Row, New York 7, N.Y. A-C
See advertisement on page 129-A

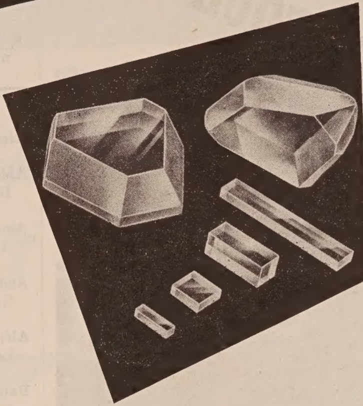
Radio Corp. of America., Engineering Products Dept., Camden, N.J. A, B
See advertisement on page 19-A

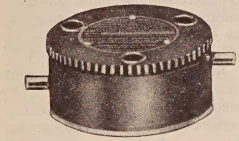
Standard Piezo Co., P.O. Box 164, Carlisle, Pa. A, B
See advertisement on page 86-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

(Continued on page 130A)

PREMIER CRYSTALS





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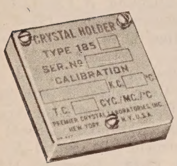
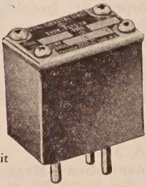
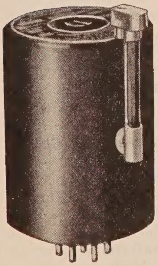

CRYSTAL HOLDER
TYPE 185
SER. No
CALIBRATION
K.C.
T.C.
CYC./MC./°C
PREMIER CRYSTAL LABORATORIES INC.
NEW YORK N.Y. U.S.A.

TYPE 185



TYPE PL 238
Dual Crystal Unit



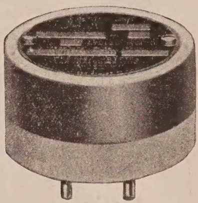
TYPE 501 CT,
501 GT

Premier Crystals are painstakingly engineered to assure optimum performance. Rigid inspection at every step of the manufacturing process, from the grading of the raw mother quartz to the shipping of the finished unit, insures utmost quality.

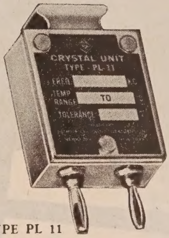
Among Premier's latest developments are crystals and holders especially designed for crystal-controlled radio receivers. If you are working on a crystal-controlled receiver, investigate these compact, economical Premier Crystal Units *now!*

Fifteen years' extensive laboratory research and specialized production experience are behind every Premier Crystal Unit. All types of crystal units from 1 kc. to 30 mc. are available.

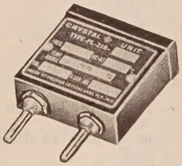
For any crystal need—consult PREMIER!



TYPE 80 C, 80 G


CRYSTAL UNIT
TYPE - PL-11
FREQ.
K.C.
TEMP RANGE
TO
TOLERANCE

TYPE PL 11



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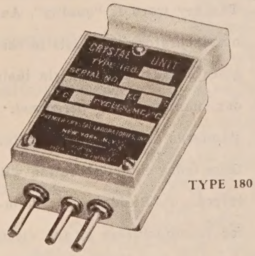
CRYSTAL UNIT
TYPE 180
SERIAL NO.
K.C.
T.C.
CYCLES/MC/°C
PREMIER CRYSTAL LABORATORIES INC
NEW YORK N.Y.

TYPE 180

PREMIER CRYSTAL LABORATORIES, INC.

MANUFACTURERS OF ELECTRONIC EQUIPMENT—PRECISION QUARTZ
CRYSTALS AND HOLDERS—"AMPHITRON" RADIO RECEIVERS

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EQUIPMENT
Sherron
Electronics
W2XDK

Just as we have no qualms about the broad adaptability of electronics, so we have no illusions about its efficiency. In short, electronics is no better than the quality of the instruments that are fashioned for its use. The key word is "quality". And quality is our fetish. . . . It governs our laboratory scienitsts in their research work. It influences our engineers and technicians in their development procedures. It motivates our manufacturing personnel. . . . We proved our uncompromising standards on vital assignments during the war. We are demonstrating them today in collaboration with some of America's leading manufacturers. . . . Builders of custom-built electronic equipment, exclusively for manufacturers of the electronic industry, we offer a specialized and confidential service.

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Division of Sherron Metallic Corporation
1201 FLUSHING AVENUE, BROOKLYN 6, N.Y.

"Where the Ideal is the Standard, Sherron Units are Standard Equipment"

24. Crystals
(Continued from page 128A)

Valpey Crystal Corp., Box 321, Holliston, Mass. A, B
See advertisement on page 128-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. A, B
See advertisement on page 42-A, 43-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo. A, B
See advertisement on page 47-A

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24. CUSTOM BUILDERS OF EQUIPMENT.

Aircraft Radio Corp., Boonton, N.J.
See advertisement on page 105-A

Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 185-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.
See advertisement on page 178-A

Alfred W. Barber Labs., 34-04 Francis Lewis Blvd., Flushing, N.Y.
See advertisement on page 152-A

Bates Laboratories, 30 W. 58th St., New York 19, N.Y.
See advertisement on page 126-A

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio Special Equipment in U.H.F. coax. Transmission Field
See advertisement on page 151-A

Boonton Radio Corp., Boonton, N.J.
See advertisement on page 153-A

The Allen D. Cardwell Mfg. Corp., 81 Prospect St., Brooklyn 1, N.Y.
See advertisement on page 118-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

Collins Radio Co., 855 35th St., S.E. Cedar Rapids, Iowa
See advertisement on page 53-A 54-A, 55-A

Communication Measurements Labs., 120 Greenwich St., New York 6, N.Y.
See advertisement on page 158-A

Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill.
See advertisement on page 154-A

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J.
See advertisement on page 67-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 126-A

Electronic Measurements Co., Red Bank, N.J.
See advertisement on page 164-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

Finch Telecommunications, Inc., 10 E. 40th St., New York 16, N.Y.
See advertisement on page 137-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y.
See advertisement on page 138-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.
See advertisement on page 134-A

The Langevin Co., Inc., 37 W. 65th St., New York 23, N.Y.
See advertisement on page 165-A

(Continued on page 132A)

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To have "everything" in radio parts takes in a lot of territory. But to have a half million feet of shelves takes in still more — an entire floor, to be exact. This abundance of space makes Sun Radio a virtual "land of milk and honey" for the engineer who needs components or testing equipment of any description. It adds up to one thing for him: Simplicity in purchasing. In a field as technical as electronics, engineers welcome the Simple way in which they can purchase from Sun. Sun-Styled Simplicity means you get what you want — the first time. Call Sun First.

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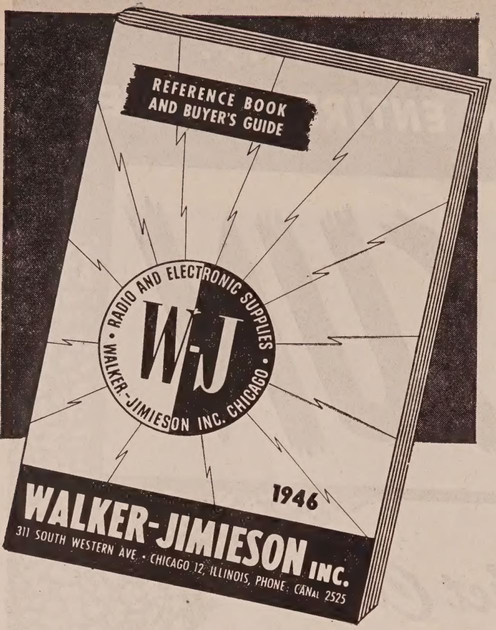
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Radio and Electronic Supplies

WALKER-JIMIESON, INC.
311 SOUTH WESTERN AVE., CHICAGO 12, ILL.
Phone CANal 2525

24. Custom Builders of Equipment

(Continued from page 130A)

Polarad Electronics Co., 135 Liberty St., New York 6, N.Y.
See advertisement on page 156-A

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y.
See advertisement on page 104-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio
See advertisement on page 150-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on page 12-A, 130-A, 142-A, 176-A

Stavid Engineering, Inc., 40 Somerset St., Plainfield, N.J.
See advertisement on page 128-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
See advertisement on page 47-A

Dials & Tuning Controls, see Hardware.

Discs, Recording, see Recording Equipment

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25. DISTRIBUTORS & JOBBERS OF RADIO EQUIPMENT & PARTS.

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill.
See advertisement on page 134-A

Communication Measurements Labs., 120 Greenwich St., New York 6, N.Y.
See advertisement on page 158-A

(Continued on page 134A)

WHERE TO LOOK IT UP

Product information in this Yearbook is grouped in basic engineering classifications. Under each firm, in the alphabetical file, we listed as many products as we were sure would interest engineers, for nearly 3000 companies. (Part II) Use this Alphabetical List to find the line of items made by each firm, and the name of the chief engineer. Listings by Products are given in Part III for our advertisers.

KEY TO INDEXES

Alphabetical Firm Index 1-96A
Index to Advertisers 188A
Index to Product Classes . . . . 122A and 174A
Product Classifications 102A
Product Listings start 104A
Part I, IRE Membership
Part II, Companies 1-96A
Part III, Products 101A

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Tubes, Rectifiers, Power Supplies, Intercommunicating and Sound Equipment, Photo-Cell Equipment, Batteries, Chargers, Spot Welding Tips and Holders, Fuses, Test Instruments, Meters, Broadcast Station Equipment, Relays, Condensers, Capacitors, Resistors, Rheostats, Transformers, Switches, Cable, Wire, Tools, Technical Books, etc.

25. Distributors and Jobbers of Radio Equipment and Parts

(Continued from page 132A)

Concord Radio Corp., 901 W. Jackson Blvd., Chicago 7, Ill.
See advertisement on page 135-A

Garrard Sales Corp., 401 Broadway New York 13, N.Y.
See advertisement on page 166-A

Harvey Radio Co., 103 W. 43rd St., New York 18, N.Y.
See advertisement on page 133-A

Hastings Sales Eng. Corp., 530 Commonwealth Ave., Boston 15, Mass.
See advertisement on page 134-A

Radionic Equipment Co., 170 Nassau St., New York 7, N.Y.
See advertisement on page 134-A

Sun Radio & Electronics Co., Inc., 122-124 Duane St., New York 7, N.Y.
See advertisement on page 131-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

26. DRAFTING EQUIPMENT & SUPPLIES.

Dynamotors, see Motor Generators.

27. ELECTRONIC CONTROL EQUIPMENT:

- **A. Air Conditioning Controls**
- **B. Burglar Alarm & Protection Devices**
- **C. Combustion & Smoke Control Equipment**
- **D. Fire Prevention Equipment**
- **E. Photo-Electric Control Devices**
- **F. Variable Speed Motor Controlling Equipment**

Aireon Mfg. Corp., Funton & Fairfax Rds., Kansas City 15, Kan. E
See advertisement on page 4-A, 5-A

(Continued on page 136A)

Radio and Electronic Equipment
SEEKING ENGINEERS

Let Radionic's experienced personnel help you with your radio and electronic requirements.

At your call are large and varied stocks at lowest possible prices—prompt personal service, with all merchandise guaranteed.

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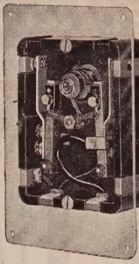

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34th St. Armory &
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1947
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LAckawanna 4-1000

27. Electronic Control Equipment
(Continued from page 134A)

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 185-A

The R. W. Cramer Co., Inc., Centerbrook, Conn.
See advertisement on page 136-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Claif. A-F
See advertisement on page 126-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y. A
See advertisement on page 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Madison Elec. Prods. Corp., 78 Main St., Madison 3, N.J. A, C, E
See advertisement on page 120-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. B
See arvertisement on page 19-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Selenium Corp. of America, 1719 W. Pico Blvd., Los Angeles 15, Calif. E
See advertisement on page 170-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y. C-F
See advertisement on page 12-A, 130-A, 142-A, 176-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. A, B, C, F
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Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y.
See advertisement on page 37-A

Sylvania Electric Products, Inc., Emporium, Pa. A, F
See advertisement on page 89-A

Telequip Radio Co., 1901-1907 S. Washtenaw Ave., Chicago 8, Ill. E
See advertisement on page 106-A

United Transformer Corp., 150 Varick St., New York 13, N.Y. F
See advertisement on page 23-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. E, F
See advertisement on page 3-A

28. EQUALIZERS.

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.
See advertisement on page 178-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burkank, Calif.
See advertisement on page 124-A

The Daven Co., 191 Central Ave., Newark 4, N.J.
See advertisement on page 32-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 126-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y.
See advertisement on page 138-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

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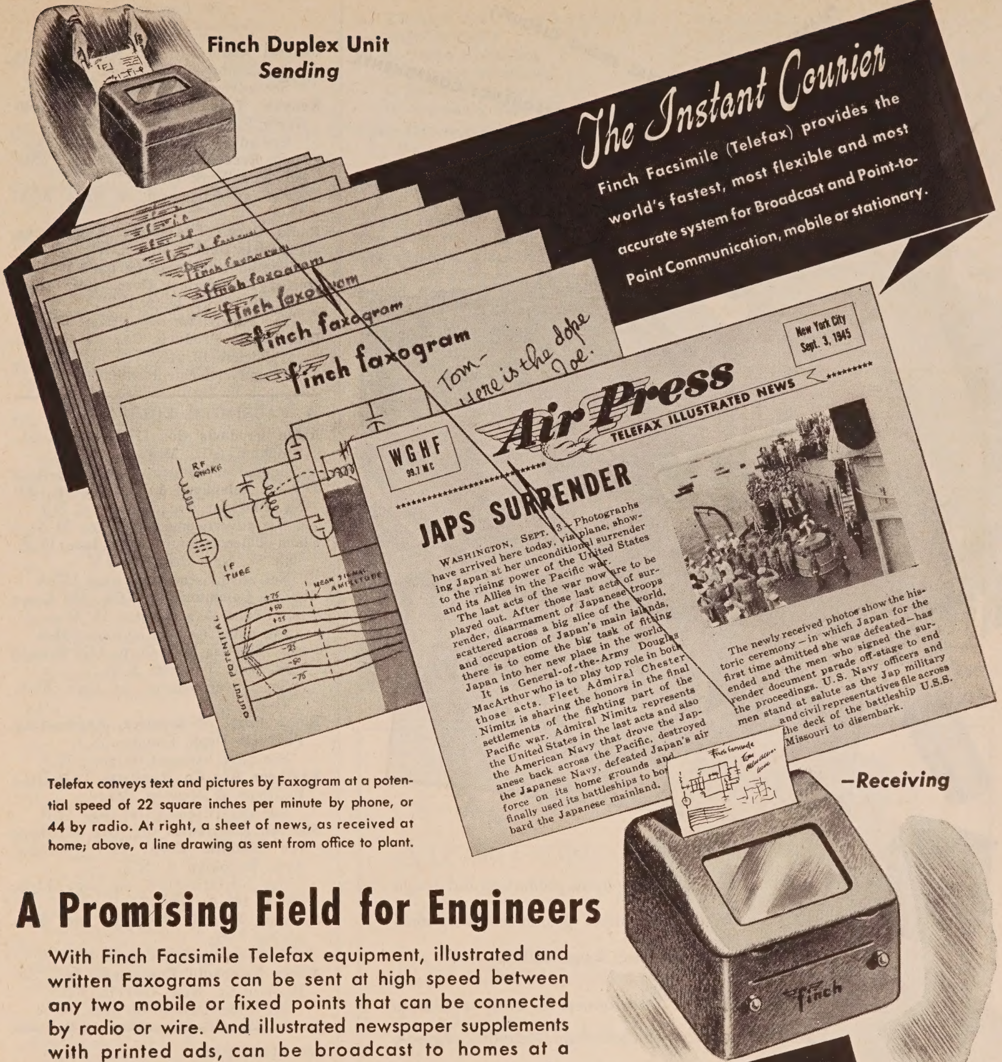

New York City
Sept. 3, 1945

Air Press

TELEFAX ILLUSTRATED NEWS

WGHF
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JAPS SURRENDER

WASHINGTON, SEPT. 3—Photographs have arrived here today, via plane, showing Japan at her unconditional surrender to the rising power of the United States and its Allies in the Pacific war. The last acts of the war now are to be played out. After those last acts of surrender, disarmament of Japanese troops scattered across a big slice of the world, and occupation of Japan's main islands, there is to come the big task of fitting Japan into her new place in the world. It is General-of-the-Army Douglas MacArthur who is to play top role in both those acts. Fleet Admiral Chester Nimitz is sharing the honors in the final settlements of the fighting part of the Pacific war. Admiral Nimitz represents the United States in the last acts and also the American Navy that drove the Japanese back across the Pacific, destroyed the Japanese Navy, defeated Japan's air force on its home grounds and finally used its battleships to bombard the Japanese mainland.

The newly received photos show the historic ceremony—in which Japan for the first time admitted she was defeated—has ended and the men who signed the surrender document parade off-stage to end the proceedings. U.S. Navy officers and men stand at salute as the Jap military and civil representatives file across the deck of the battleship U.S.S. Missouri to disembark.

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There are Freed Transformers for every application in all fields of communications and electronics, ruggedly constructed to withstand long and severe usage—precision engineered to meet your most stringent requirements.

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FREED TRANSFORMER COMPANY, INC.

72 SPRING STREET
NEW YORK 12, N. Y.

28. Equalizers
(Continued from page 136A)

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N.Y.
See advertisement on page 181-A

Presto Recording Corp., 242 W. 55th St., New York 19, N.Y.
See advertisement on page 10-A, 11-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

United Transformer Corp., 150 Varick St., New York 13, N.Y.
See advertisement on page 23-A

Utah Radio Products Co., 820 Orleans St. Chicago 10, Ill.
See advertisement on page 149-A

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29. FACSIMILE EQUIPMENT.

Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

Finch Telecommunications, Inc., 10 E. 40th St., New York 16, N.Y.
See advertisement on page 137-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.
See advertisement on page 134-A

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y.
See advertisement on page 40-A, 41-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on page 12-A, 130-A, 142-A, 176-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Times Telephoto Equipment, Inc., 229 W. 43rd St., New York 18, N.Y.
See advertisement on page 136-A

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30. FILTERS:

A. Band Pass
B. Noise Elimination
C. Sound Effect

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass. B
See advertisement on page 69-A

American Transformer Co., 178 Emmet St., Newark 5, N.J.
See advertisement on page 57-A

The Astatic Corp., P.O. Box 120, Conneaut, Ohio
See advertisement on page 79-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. A
See advertisement on page 178-A

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio U.H.F. Filters, Special Types
See advertisement on page 151-A

30. Filters

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Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill. A, B
See advertisement on page 180-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif. A, B
See advertisement on page 124-A

Communication Parts, 1101 N. Paulina St., Chicago 22, Ill. A
See advertisement on page 123-A

Cornell-Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N.J. A, B
See advertisement on page 35-A

The Daven Co., 191 Central Ave., Newark 4, N.J.
See advertisement on page 32-A

Tobe Deutschmann Corp., 863 Washington St., Canton, Mass. A, B
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DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill. A
See advertisment on page 27-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif. A, B
See advertisement on page 126-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A, B
See advertisement on page 39-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y. A, B
See advertisement on page 138-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
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General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. A
See advertisement on page 51-A

Inductive Equipment Corp., Quarry Park, Gettysburg, Pa. A, B
See advertisement on page 58-A

Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N.Y. A, B
See advertisement on page 181-A

The Langevin Co., Inc., 37 W. 65th St., New York 23, N.Y. A
See advertisement on page 165-A

Micro-Ferrocart Prods. Div., Maguire Industries, Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 127-A

Solar Mfg. Corp., 285 Madison Ave., New York 17, N.Y. B
See advertisement on page 85-A

Sorenson & Co., Inc., 375 Fairfield Ave., Stamford, Conn. A
See advertisement on page 121-A

Sprague Electric Co., 189 Beaver St., North Adams, Mass. A, B
See advertisement on page 71-A

United Transformer Corp., 150 Varick St., New York 13, N.Y. A
See advertisement on page 23-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill.
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. B
See advertisement on page 42-A, 43-A

31. FREQUENCY MEASURING EQUIPMENT

A. Audio Frequency
B. Primary Standards
C. Radio Frequency
D. Secondary Standards

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. A
See advertisement on page 178-A

Boonton Radio Corp., Boonton, N.J. A, C
See advertisement on page 153-A

The Allen D. Cardwell Mfg. Corp., 81 Prospect St., Brooklyn 1, N.Y. C, D
See advertisment on page 118-A

Crystal Research Labs., Inc., 29 Allyn St., Hartford 3, Conn. B, D
See advertisement on page 128-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y. D
See advertisement on page 45-A

Tobe Deutschmann Corp., 863 Washington St., Canton, Mass. A, C
See advertisment on page 119-A

Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill. C
See advertisement on page 154-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif. D
See advertisement on page 126-A

Electronic Measurments Co., Red Bank, N.J. A, C, D
See advertisement on page 164-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A
See advertisement on page 39-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. A-D
See advertisement on page 51-A

Hickok Elec. Inst. Co., 10587 Dupont Ave., Cleveland 8, Ohio A, C
See advertisment on page 56-A

Measurements Corp., 116 Monroe St., Boonton, N.J. D
See advertisement on page 159-A

Panoramic Radio Corp., 242 W. 55th St., New York 19, N.Y. C
See advertisement on page 17-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. A, C
See advertisement on page 19-A

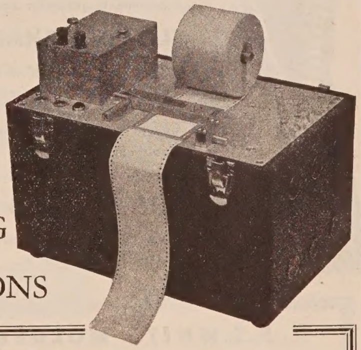
Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on page 12-A, 130-A, 142-A, 176-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. A
See advertisement on page 121-A

Sylvania Electric Products, Inc., Emporium, Pa. C
See advertisement on page 89-A

United Transformer Corp., 150 Varick St., New York 13, N.Y. A
See advertisement on page 23-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A



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For I keep a faithful record of all your tests, whether you investigate sound, noise, vibration, sound systems, etc."

Here is a graphic recorder which will record either on db or linear scale, from 10 to 100,000 c.p.s. Its price is only $425. It is convenient to carry: Size 8″ x 10″ x 12″; weight 20 lbs.

Truly the most unique recorder which deserves your serious consideration.

Ask for literature from the manufacturer

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233 BROADWAY, NEW YORK 7, N.Y.

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FOR ALL RADIO APPLICATIONS

REMOTE CONTROL—

S.S.White's comprehensive line of flexible shafts includes types specially engineered for remote control of radio communication and directional equipment and accessories used in aircraft, airports, automobiles, ships, broadcasting, home radios, etc. These shafts are distinguished by their smooth, easy, sensitive operation resulting from the following in-built characteristics.

(1) Minimum torsional deflection under load.
(2) Approximately equal deflection in either direction of rotation.
(3) Low internal friction.

POWER DRIVES—

S.S.White also offers a wide selection of flexible shafts for instrument, generator and similar drives.

FLEXIBLE SHAFT HANDBOOK—FREE

Gives complete information and technical data about flexible shafts and how to apply them. Copy sent free if you write for it on your business letterhead and mention your position.

ENGINEERING COOPERATION—

Always available without obligation for working out specific applications. Write us.

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The "All-Weather" Resistors
1,000 OHMS TO
1,000,000 MEGOHMS
BULLETIN 4505 gives full details. Copy on request.

Type 65X
1 Watt—Hexagonal
(Actual Size)

S.S.WHITE INDUSTRIAL DIVISION
THE S. S. WHITE DENTAL MFG. CO.
DEPT. Y, 10 EAST 40th ST., NEW YORK 16, N. Y.
FLEXIBLE SHAFTS • FLEXIBLE SHAFT TOOLS • AIRCRAFT ACCESSORIES
SMALL CUTTING AND GRINDING TOOLS • SPECIAL FORMULA RUBBERS
MOLDED RESISTORS • PLASTIC SPECIALTIES • CONTRACT PLASTICS MOLDING

One of America's AAAA Industrial Enterprises

31. Frequency Measuring Equipment
(Continued from page 139A)

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. A, B, D
See advertisement on page 42-A, 43-A

32. **FREQUENCY MEASURING SERVICES**

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on pages 12-A 130-A, 142-A, 176-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on pages 42-A, 43-A

33. **FUSES & FUSE HOLDERS**

Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill.
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on pages 48-A, 49-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Generators:
A. Power: see Motor Generators
B. Signal: see Frenquency Measuring Equipment, also Test Equip.

34. **GRAPHIC RECORDERS**

Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See Adevtisement on page 175-A

Finch Telecommunications, Inc., 10 E. 40th St., New York 16, N.Y.
See advertisement on page 137-A

Sound Apparatus Co., 233 Broadway, New York 7, N.Y.
See advertisement on page 139-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on pages 42-A, 43-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.
See advertisement on page 3-A

35. **HARDWARE:**
A. Binding Posts
B. Bushings
C. Dials & Tuning Controls
D. Flexible Shafts
E. Lugs
F. Screws
G. Springs

Aircraft-Marine Products Inc., 1521-73 N. Fourth St., Harrisburg, Pa. E
See advertisement on page 141-A

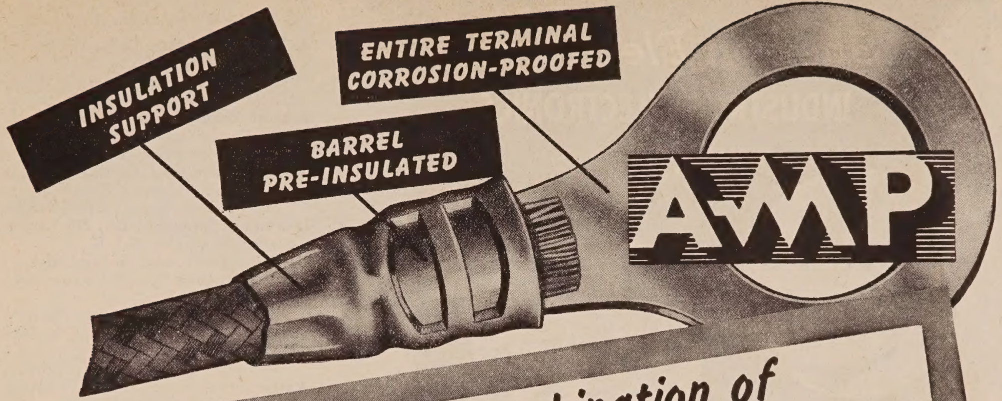
Aircraft Radio Corp., Boonton, N.J. A, C, D
See advertisement on page 105-A

Alden Products Co., 117 N. Main St., Brockton 64D, Mass. C
See advertisement on page 175-A

Cambridge Thermionic Corp., 456 Concord Ave., Cambridge 38, Mass. E
See advertisement on page 21-A

Ford Radio & Mica Corp., 538 63rd St., Brooklyn 20, N.Y.
See advertisement on page 146-A

(Continued on page 142A)



The Perfect Combination of
SUPERLATIVE PERFORMANCE CHARACTERISTICS
is found only in
AMP Solderless WIRE TERMINALS

CORROSION-PROOFING

Terminals corrosion-proofed by the AMP exclusive process show no increase in resistance under excessively corrosive conditions. AMP Corrosion-Proofed Terminals mean higher efficiency and constant performance for the most sensitive instruments and equipment.

PRE-INSULATION

The AMP Pre-Insulated Terminal is terminal and insulation in one. Saves time in handling, stocking and installation. Only AMP has insulation *bonded* to the terminal—can't slip or come off. AMP Pre-Insulation saves man-hours, lowers production costs.

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AMP *Diamond-Grip* Insulation Support makes a superior, vibration-proof electrical connection, gives fully circumferential, metal support to the insulation. A *safer, neater,* connection. No frayed insulation, no broken wires, no additional installation time.

One operation of AMP hand tool or press die makes the complete installation of terminal on wire.

Only AMP gives all THREE in ONE terminal! Only AMP Terminals provide connections meeting the rigid requirements of the most sensitive electrical or electronic instruments and equipments! . . Write for your copy of new AMP Catalog today.

AMP

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1521-73 NORTH FOURTH ST., HARRISBURG, PENNA.

In Canada: DAVID C. ORROCK, 1405 Bishop St., Montreal, Que.
F. N. ADAMS, 726 Homer Street, Vancouver, B. C.
F. MANLEY CO., 43 Victoria Street, Toronto, Ont.

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INDUSTRIAL ELECTRONICS
HEATING

Electronic heating—dielectric and induction—is already proving its superiority in industrial processes where quick heating is necessary.

Among the industries where electronic heating can perform to real advantage are the following:

- PAPER INDUSTRY—for process dyeing and gluing
- WIRE INDUSTRY—for annealing and tinning
- FOOD INDUSTRY—for sterilization, pasteurization, cooking and dehydration
- PLASTIC INDUSTRY—preheating compound

Electronics does it better! No mere overstatement, but a fact that is being demonstrated in industry after industry. Yes, electronics does it better! And at a saving of manpower, motion and money.

As an engineering service and manufacturing organization, we can be of service to you. Our engineers are available for consultation as to how electronics can solve the quick heating problem in your industry.

Sherron Electronics
W2XDK

SHERRON ELECTRONICS CO.
Division of Sherron Metallic Corp.
1201 Flushing Avenue Brooklyn 6, N. Y.

35. Hardware

(Continued from page 140A)

A. W. Franklin Mfg. Corp., 175 Varick St., New York 14, N.Y. A
See advertisement on pages 109-A, 175-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. A, C
See advertisement on page 51-A

Graphite Metallizing Corp., 1048 Nepperhan Ave., Yonkers 3, N.Y. B
See advertisement on page 150-A

Instrument Specialties Co., 270 Bergen Blvd., Little Falls, N.J. G
See advertisement on page 60-A

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N.Y. C
See advertisement on page 150-A

The Palnut Co., 94 Cordier St., Irvington 11, N.J. A, B, E, F
See advertisement on page 28-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

S. S. White Dental Mfg. Co., Industrial Division 10 E. 40th St., New York 16, N.Y. C, D
See advertisement on page 140-A

36. INDUCTION HEATING EQUIPMENT

Eastern Engineering Co., 186 Fox St., New Haven 6, Conn.
See advertisement on page 36-A

Electronics Engineers, 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 126-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on pages 48-A, 49-A

Inductive Equipment Corp., Quarry Park, Gettysburg, Pa.
See advertisement on page 58-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisment on page 19-A

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y. Dielectric Heating
See advertisement on page 104-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on pages 12-A 130-A, 142-A, 176-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

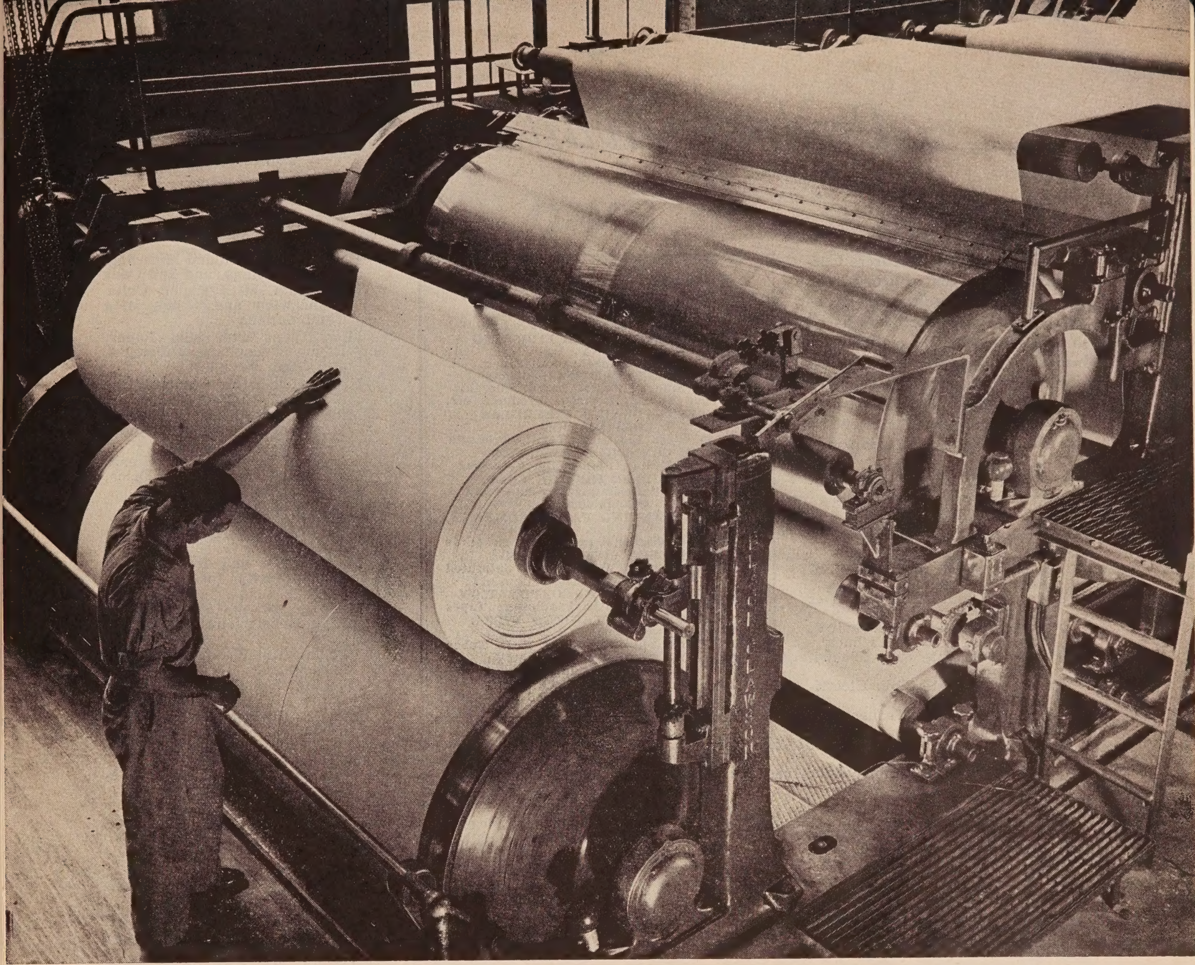
Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.
See advertisement on page 3-A

37. INDUCTORS.

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.
See advertisement on page 178-A

Communication Parts, 1101 N. Paulina St., Chicago 22, Ill.
See advertisement on page 123-A

(Continued on page 146A)



Our specialty is the manufacture of insulating papers for condensers, coils, transformers, or other insulating purposes...in thicknesses ranging from .0002" to .004".

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Research Laboratories: Chrysler Bldg., New York, N. Y.

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I M C

Insulation Manufacturers Corporation is the distributor in the industrial Midwest for the products of the manufacturers listed in the panel to the right. Data bulletins giving complete information on each line are available now or are in the course of compilation. Your inquiries and orders will have our prompt attention.

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NEW JERSEY WOOD FINISHING COMPANY, Inc.
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OWENS-CORNING FIBERGLAS CORPORATION
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THE P. D. GEORGE CO.
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AND OTHER OUTSTANDING MANUFACTURERS

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- Permacel Paper Electrical Tapes—Crepe and Flatback
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- Permacel Acetate Cloth Electrical Tapes
- Texcel (Cellophane) Transparent Adhesive Tapes
- Permacel Coated Cloth Electrical Tape (formerly Electape)
- Vartex Varnished Cambric Adhesive Tapes

Asbestos
- Asbestos Woven Listing Tapes and Sleevings
- Paper and Paper Electrical Tapes

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- Paper, Linen, and Canvas Base Laminated Sheets
- Fiberglas and Asbestos Laminated Sheets
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- Fabricated Parts Made from Sheets, Rods, and Tubes

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- Varnished Fiberglas Tubings and Saturated Sleevings
- Mica-Fiberglas Combination Slot Insulations
- Mica-Fiberglas Flexible Sheets and Tapes
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- Manning Pressboard and Fullerboards
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- Cuffed and Fabricated Slot Insulation and Other Specialties
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- Vartex Varnished Asbestos Cloth
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- Varnished Papers
- Silicone Coated Fiberglas Cloth

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- Flexible Varnished Tubings and Saturated Sleevings
- Fiberglas Flexible Varnished Tubings and Saturated Sleevings
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And Other Products to Provide a Complete Insulation Service

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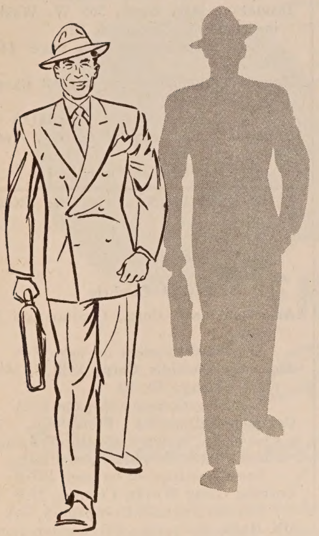
Engineering Service from

I M C



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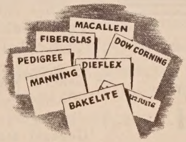
. . . But not on Your Payroll

The modern march of business demands the attention of experts. Your present staff, unless familiar with the expert services of the IMC organization, will welcome the plus-service which is available in the person of the IMC engineer.

He is, in effect, traveling companion to IMC products. He is ready at all times to . . .

1. Assist you in the selection of the best insulating material for the job.
2. Familiarize you with their proper application.
3. Suggest ways to eliminate waste.
4. Help increase your production.

EVERYTHING FROM ONE SOURCE
A complete insulation service from one source gives time-saving advantages to you.



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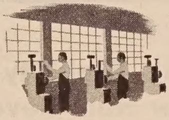
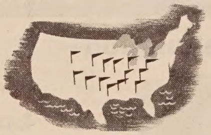
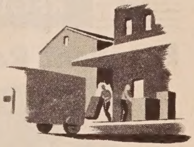
The highest quality products guarantee you top-notch performance of your product.



TAILOR-MADE TO YOUR NEEDS
If you desire, we have the facilities to fabricate parts to your specifications.



"KNOW HOW" ENGINEERS . . . STRATEGICALLY LOCATED
IMC engineers call regularly all over the Midwest—give special service in emergencies.



PROMPT SHIPMENT FROM COMPLETE STOCKS
Products are quickly on the way to you by truck, freight, mail, or express.

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Representatives in:
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DETROIT 2: 11341 Woodward Avenue
MINNEAPOLIS 3: 1208 Harmon Place
PEORIA 5: 101 Heinz Court

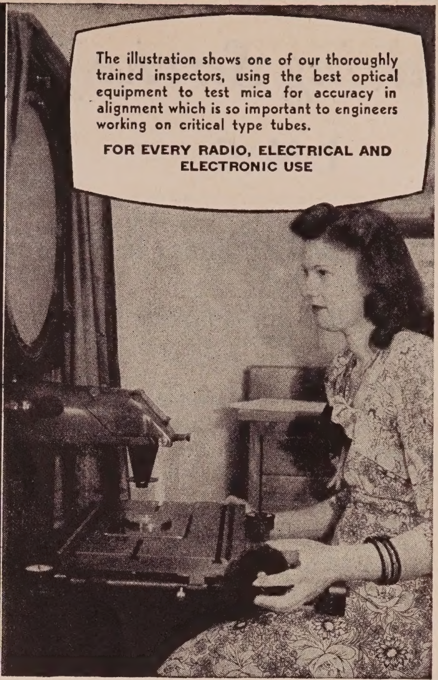
QUALITY CONTROL OF MICA

F.M.C.

FORD RADIO & MICA CORP.

Joseph J. Long, President

538 63rd Street,
Brooklyn 20, N. Y.
Telephone:
Windsor 9-8300
Established 1917

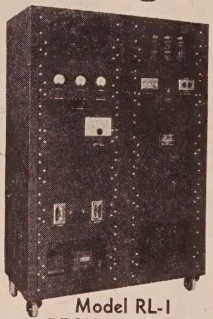


The illustration shows one of our thoroughly trained inspectors, using the best optical equipment to test mica for accuracy in alignment which is so important to engineers working on critical type tubes.

FOR EVERY RADIO, ELECTRICAL AND ELECTRONIC USE

REGULATED POWER SUPPLIES

Excellent Regulation—



Model RL-1
REGULATED A.C.
ELECTRONIC GENERATOR
Maximum Power Output 300 Watts
Variable Waveform
Variable Frequency

This unit embodies a novel feature which maintains essentially constant RMS output voltage while permitting variation of waveform and frequency. 50 to 3,000 C.P.S.

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Model 44

OUTPUT VOLTAGE — Continuously variable from 0-300 Volts DC at 100 MA Max.

Prices and delivery dates and priority requirements will be given upon request.

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OF NEW YORK
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37. Inductors
(Continued from page 142A)

DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill.
See advertisement on page 27-A
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A
Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y.
See advertisement on page 65-A
Insulation Mfg. Corp., 565 W. Washington Blvd., Chicago 6, Ill.
See advertisement on page 144, 145-A
Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N.Y.
See advertisement on page 181-A
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 121-A

38. INSULATION: (Also see Ceramics).

- **A. Cloth**
- **B. Glass Seals**
- **C. Mica**
- **D. Varnished Cambric**

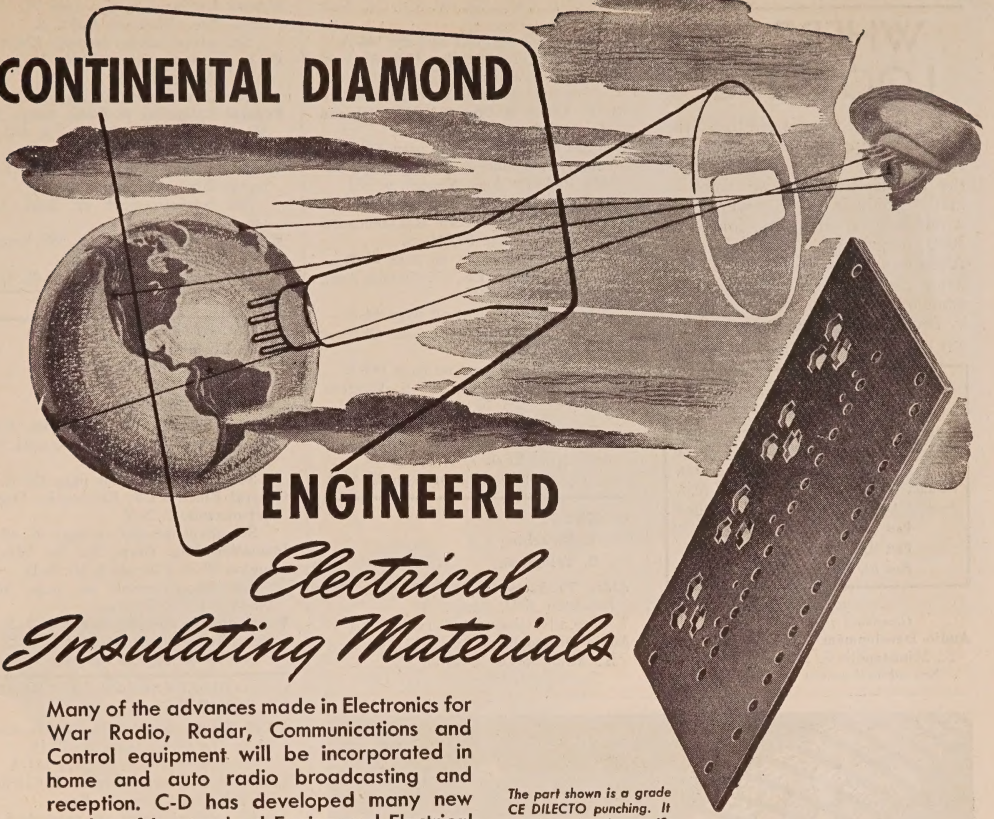
American Lava Corp., Chattanooga 5, Tenn.
See Advertisement on page 7-A
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.
See advertisement on page 33-A
Continental-Diamond Fibre Co., 16 Chapel St., Newark 48, Del. C Laminated Plastic & Vulcanized Fibre..
See advertisement on page 147-A
Corning Glass Works, Corning, N.Y. B
See advertisement on page 8, 9-A
DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill. B
See advertisement on page 27-A
Ford Radio & Mica Corp., 538 63rd St., Brooklyn 20, N.Y.
See advertisement on page 146-A
General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48- 49-A
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A
Insulation Mfg. Corp., 565 W. Washington Blvd., Chicago 6, Ill. A, D
See advertisement on page 144, 145-A
Mycalex Corp. of America, 60 Clifton Blvd., Clifton, N.J. C
See advertisement on page 13-A
Schweitzer Paper Co., 182 Cornelison Ave., Jersey City, N.J. E
See advertisement on page 143-A
Stupakoff Ceramic & Mfg. Co., Box 390, Latrobe, Pa. B
See advertisement on page 63-A
Sylvania Electric Products, Inc., Emporium, Pa. B
See advertisement on page 89-A
Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A, C, D
See advertisement on page 3-A

39. JACKS.

Aircraft Radio Corp., Boonton, N.J.
See advertisement on page 105-A
Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

(Continued on page 148A)

CONTINENTAL DIAMOND



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Many of the advances made in Electronics for War Radio, Radar, Communications and Control equipment will be incorporated in home and auto radio broadcasting and reception. C-D has developed many new grades of its standard Engineered Electrical Insulating Materials to meet the requirements of these engineering advances.

The part shown is a grade CE DILECTO punching. It met the engineering specifications calling for a high dielectric, strong enough to mount current carrying parts, and resist severe impact and vibration.

KF-45

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DILECTO—A Laminated Phenolic.
CELORON—A Molded Phenolic.
DILECTENE—A Pure Resin Plastic Especially Suited to U-H-F Insulation.
HAVEG—Plastic Chemical Equipment, Pipe, Valves and Fittings.

The NON-Metallics

DIAMOND Vulcanized FIBRE
VULCOID—Resin Impregnated Vulcanized Fibre.

MICABOND—Built-Up Mica Electrical Insulation.

Standard and Special Forms

Available in Standard Sheets, Rods and Tubes; and Parts Fabricated, Formed or Molded to Specifications.

Descriptive Literature

Bulletin GF gives Comprehensive Data on all C-D Products. Individual Catalogs are also Available.

The C-D technicians who have worked to develop better Dielectrics to meet War's severe requirements, are now ready to help you solve your electrical insulating problems. Their familiarity with 6 distinctly different types of electrical insulating materials assures you of unbiased recommendations.

DISTRICT OFFICES
NEW YORK 17 • CLEVELAND 14 • CHICAGO 11
SPARTANBURG, S. C. • SALES OFFICES IN PRINCIPAL CITIES
•
WEST COAST REPRESENTATIVES
MARWOOD LTD., SAN FRANCISCO 3
•
IN CANADA:
DIAMOND STATE FIBRE CO. OF CANADA, LTD., TORONTO 8

Continental-Diamond FIBRE COMPANY

Established 1895.. Manufacturers of Laminated Plastics since 1911—NEWARK 48 • DELAWARE

WHERE TO LOOK IT UP

Product information in this Yearbook is grouped in basic engineering classifications. Under each firm, in the alphabetical file, we listed as many products as we were sure would interest engineers, for nearly 3000 companies. (Part II) Use this Alphabetical List to find the line of items made by each firm, and the name of the chief engineer. Listings by Products are given in Part III for our advertisers.

KEY TO INDEXES

Alphabetical Firm Index	1-96A
Index to Advertisers	188A
Index to Product Classes	122A and 174A
Product Classifications	102A
Product Listings start	104A
Part I, IRE Membership	
Part II, Companies 1-96A	
Part III, Products 101A	

39. Jacks
(Continued from page 146A)

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.
See advertisement on page 178-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y.
See advertisement on page 148-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

C. P. Clare & Co., 612 N. Michigan Ave., Chicago 11, Ill.
See advertisement on page 172-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N.Y.
See advertisement on page 64-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill.
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer.
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on page 42, 43-A

40. KEYS:

- **A. Switching**
- **B. Telegraph**

Alden Products Co., 117 N. Main St., Brockton 64D, Mass. B
See advertisement on page 175-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. A
See advertisement on page 178-A

PICKU
TRANSDUCE
ACOUSTIC DEVICE
RETRAX CORD SETS
MEDICAL INSTRUMENTS
HEARING AID COMPONENTS
TIMING DEVICES
CONTROL INSTRUMENTS
TELEPHONE INTERCOM SETS
MOLDED CORD SETS
CONNECTORS
SWITCHES
LOUD SPEAKERS
AMPLIFIERS
HEADGEAR
HANDSETS
HEADPHONES
MICROPHONES
NO REJECTS WITH COMPONENTS BY AVIOMETER
AVIOMETER
CORPORATION
370 WEST 35th STREET
NEW YORK 1, N. Y.

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif. A
See advertisement on page 124-A

C. P. Clare & Co., 612 N. Michigan Ave., Chicago 11, Ill.
See advertisement on page 172-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A
See advertisement on page 39-A

Insulation Mfg. Corp., 565 W. Washington Blvd., Chicago 6, Ill.
See advertisement on page 144, 145-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. A
See advertisement on page 42, 43-A

Knobs, see Moulded Products

41. LACQUERS:

- **A. Finishing**
- **B. Fungus Proofing**
- **C. Protecting**
- **D. Waterproofing**

Patterson Screen Div. E. I. Du Pont De Nemours & Co., Inc., Towanda, Pa. A, C, D
See advertisement on page 157-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

Insulation Mfg. Corp., 565 W. Washington Blvd., Chicago 6, Ill. A-D
See advertisement on page 144, 145-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A, C, D
See advertisement on page 3-A

42. LOUDSPEAKERS & HEADPHONES

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill.
See advertisement on page 134-A

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kan.
See advertisement on page 4, 5-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y.
See advertisement on page 148-A

DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill.
See advertisement on page 27-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio
See advertisement on page 150-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill.
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on page 42, 43-A

Lugs, see Hardware.

43. MACHINERY, FIXTURES, & TOOLS FOR RADIO & ELECTRONIC MANUFACTURING

Corning Glass Works, Corning, N.Y.
See advertisement on page 8, 9-A

Eastern Engineering Co., 186 Fox St., New Haven 6, Conn.
See advertisement on page 36-A

(Continued on page 150A)

OUTPUT
MINUTES SECONDS
REWIND
RECORD LISTEN
MOTOR SW
RECORD LISTEN
VOLUME
TONE
Magic Wire by utah

Magic Wire

MAGNETIC WIRE

Recorder and Reproducer

. . . a portable electronic device for recording voice, sound and music on wire. Recordings may be kept as a permanent record. If desired, wire can be used over and over again by erasing magnetically and recording at the same time.

model illustrated

No. 60 portable (improved)*

- **115 V—AC 60 cycles only**
- **Size 9½″ x 12¾″ x 12¾″. Weight 29 lbs.**
- **Neon flash bulb for recording level**
- **Taps for 10, 50, 250, and 500 ohm output**

write for complete information to

UTAH RADIO PRODUCTS

division of INTERNATIONAL DETROLA CORPORATION

820 ORLEANS STREET, CHICAGO 10, ILLINOIS

utah

***Model No. 60M includes a meter calibrated in V. U. for recording and line output level at additional cost.**

THE MAKERS OF

BAREX GETTERS

OFFER YOU . . .

SPECIALIZATION

- Manufacturing just one product . . . constant and controlled laboratory methods have made Barex Getters the accepted standard among top-quality tube manufacturers.

FLEXIBILITY

- An unusually wide range of sizes, shapes and compositions enables us to meet your specifications exactly and promptly.

NEW DEVELOPMENTS

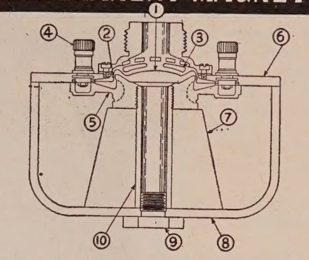
- King Laboratories engineers keep abreast of the times to give you the latest in getter efficiency.

We are the world's largest producers of getters.

KING LABORATORIES, INC.
127 Solar St., Syracuse 4, N.Y.

Since 1930
Working for Radio Tube Engineers

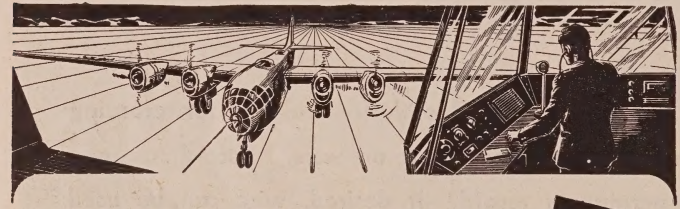
Inside Facts About
ROWE No. 7
PERMANENT MAGNET



1—One-piece metal diaphragm. Voice coil wound on diaphragm.
2—Horn mounting accurately centered.
3—Perforated die-cast palate.
4—Cadmium plated heavy-duty binding posts.
5—Flange molded to inner pole piece.
6—Outer pole piece of special alloy.
7—Heavy ALNICO permanent magnet.
8—Bowl of heavy gauge steel.
9—Brass assembly nut binds all parts.
10—Inner pole piece made of brass.

Write for circular IRE giving complete details.

ELECTRONICS DIVISION
ROWE *Industries*
3120 MONROE ST., TOLEDO 6, OHIO



An Invitation to All Electrical Designers to

TRY SILVER GRAPHALLOY

for RELAYS MOTORS CONTROLS ELECTRONICS

FOR BRUSHES

High current density, low contact drop, low electrical noise, and self-lubrication are characteristics of this silver-impregnated molded graphite that may be the answer to your electrical brush problems.

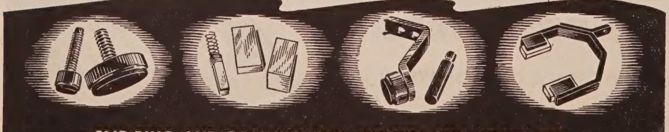
FOR CONTACTS

Low contact resistance and non-welding when breaking surge currents are inherent properties of this unique combination of conductive silver and self-lubricating graphite.

SAMPLES of Silver Graphalloy will be gladly furnished for test on your applications. Silver Graphalloy is usually silver plated to permit easy soldering to leaf springs or holders. Why not WRITE NOW for your test samples?

ALWAYS SPECIFY GRAPHALLOY Trade Mark Reg. U.S. Pat. Off.

GRAPHITE METALLIZING CORPORATION
1057 NEPPERHAN AVE • YONKERS, NEW YORK



SLIP-RING AND COMMUTATOR BRUSHES AND CONTACTS

43. Machinery, Fixtures & Tools
(Continued from page 148A)

Zenith Optical Laboratory, 123 W. 64th St., New York 23, N.Y.
See advertisement on page 156-A

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44. **MAGNETS:**
- **A. Electro**
- **B. Permanent**

Arnold Engineering Co., 147 E. Ontario St., Chicago 11, Ill. B
See advertisement on page 73-A
DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill. A, B
See advertisement on page 27-A
General Electric Co., Electronics Dept., Schenectady 5, N.Y. B
See advertisement on page 48, 49-A
Inductive Equipment Corp., Quarry Park, Gettysburg, Pa. A
See advertisement on page 58-A
Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio A
See advertisement on page 150-A
Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 121-A
Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Measuring Equipment, see Test Equipment.

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45. **METALS:**
- **A. Copper**
- **B. Ferrous**
- **C. Non-Ferrous**
- **D. Precious & Rare**

Sigmund Cohn & Co., 44 Gold St., New York 7, N.Y. C, D
See advertisement on page 186-A
Graphite Metallizing Corp., 1048 Nepperhan Ave., Yonkers 3, N.Y.
See advertisement on page 150-A
King Labs., Inc., 127 Solar St., Syracuse 4, N.Y. C, D
See advertisement on page 150-A
National Carbon Co., Inc., 30 E. 42nd St., New York 17, N.Y.
See advertisement on page 91-A
Stackpole Carbon Co., Tannery St., St. Mary's 3, Pa.
See advertisement on page 61-A
Stupakoff Ceramic & Mfg. Co., Box 390 Latrobe, Pa.
See advertisement on page 63-A
Sylvania Electric Products, Inc., Emporium, Pa. A-D
See advertisement on page 89-A
Westinghouse Electric Corp., P.O. Box 868 Pittsburgh 30, Pa. C
See advertisement on page 3-A

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46. **METERS:**
- **A. Ammeters**
- **B. Frequency Indicating**
- **C. Power Level**
- **D. Vacuum Tube Voltmeters**
- **E. Voltmeters**
- **F. Wattmeters**

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A-E
See advertisement on page 134-A
American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. D
See advertisement on page 185-A
Ballantine Labs., Inc., Boonton, N.J. D
See advertisement on page 20-A

(Continued on page 152A)

NO MORE GUESSWORK!

MODEL 63-A WATTMETER AND WIDE BAND LINE TERMINATION

VHF-UHF

FOR OUTPUT MEASUREMENT

Here is *the* way to measure RF output in the spectrum between 10-1500 megacycles and power levels of 1-500 watts. Combining unique and proven methods of line termination with meter readings, the Model 63-A is now widely used in the VHF-UHF field.

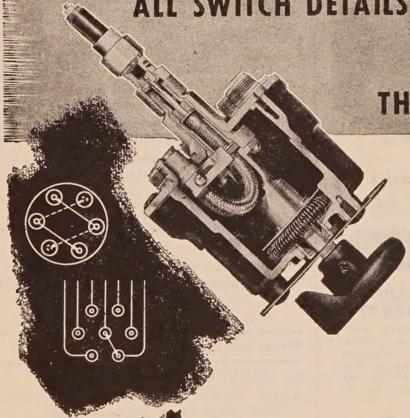
USES: Determination of power output and alignment of transmitters on either the production line or in the laboratory. Ruggedly built, the 63-A is adaptable to most power measurement problems.

METHOD: Employing a length of attenuating coax as a termination, thermocouples, inserted in the line serve as measuring elements. Wide-band impedance constancy is realized and standing-wave ratios (voltage) are held to a maximum SWR of 1.25 between 10 and 1500 MC.

CALIBRATION: Meter readings of the Model 63-A are linearly related to power at fixed frequency. Thermocouples, through skin effect, increase in sensitivity with frequency. With the instrument, curves are furnished showing a single multiplying factor which, applied to scale reading, gives power value. Control of impedance and individual couple adjustment permit the use of standardized calibration curves.

CHARACTERISTIC IMPEDANCE IS MAINTAINED THROUGH ALL SWITCH DETAILS WITH COAXWITCH

THE *Selector Switch* FOR COAXIAL CIRCUITS



USES: As a channel selector in transmitter or receiver controls; production line testing of coaxial circuited equipment; selection of antennas; with phase monitors in directionals; etc.

CABLE TYPES AND CONNECTORS: Three models now available for use with 50/52-ohm cables and Type "N" Fittings. Adapters available for use with other type fittings. Other impedance levels, such as 70/75-ohm, can be supplied.

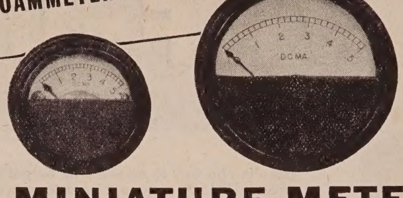
STANDING WAVE RATIOS: At 550 MC, SWR (voltage) is below 1.03; at 1000 MC, below 1.1; and at 3000 MC, it is not over 1.3.

MODELS: Model 74 handles single circuit with choice of six channels. Model 72-2 handles double circuit with choice of two channels (DPDT). Model 718 handles single circuit with choice of eight channels. Can be supplied for remote operation.

BIRD ELECTRONIC CORPORATION, 1800 E. 38th ST., CLEVELAND 14, OHIO

BIRD ELECTRONIC *Instrumentation for Coaxial Transmission*

VOLTMETERS • MILLIVOLTMETERS
AMMETERS • MILLIAMMETERS
MICROAMMETERS



MB MINIATURE METERS

1-INCH SIZE . . . the smallest, lightest made. Expert design, highest quality materials, precision manufacture gives them accuracy and durability of much larger meters. Available in standard DC ranges from 100 microamperes through 10 milliamperes . . . and 0-10 and 0-50 millivolts. Standard external shunts, multipliers, rectifiers available for other ranges.

1½-INCH SIZE . . . weighing 1½ oz. is self-contained in all standard DC ranges, rectifier AC voltmeters and milliammeters.

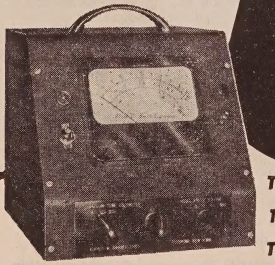
Both sizes have the same rugged, lightweight movement, Alnico No. 5 magnet, jewel bearings. Hermetically sealed, anodized aluminum case mounts with threaded ring. Any scale or pointer can be specified for special applications.

THE MB MANUFACTURING COMPANY, INC.
Instrument Division • 331 East Street, New Haven 11, Conn.

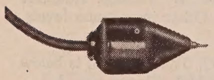
INSTRUMENT DIVISION

IMMEDIATE DELIVERIES

VACUUM TUBE VOLTMETER
RF — AC — DC



The result of 10 years of Vacuum Tube Voltmeter Engineering.



MODEL VM-27

1-3-10-30-100 volts full scale.
Peak response, r.m.s. calibration.

HIGH IMPEDANCE—4 megohms at 50 cycles, 60,000 ohms at 100 megacycles. 7 megohms for d-c.

ACCURATE—Better than 2 percent on d-c and 60 cycles thru 50 megacycles.

SELF-CONTAINED—115 or 230 volt 50-60 cycle line operation.

RF PROBE

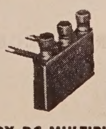
Interchangeable probe included for convenience and efficiency in making AC and RF measurements. Input capacity 5 micro farads. Ruggedly mounted 6H6 tube in balanced circuit. Complete voltmeter with probe $150 net f.o.b. Flushing, N. Y.

ACCESSORIES

To increase VM-27 range to 1000 volts.

10X AC MULTIPLIER MODEL ACM-27

Input impedance even greater than probe alone. Flat response from 20 cycles to 200 megacycles. $17.00 net f.o.b. Flushing, N Y.



10X DC MULTIPLIER MODEL DCM-27

5 megohms input resistance. $8.00 net f.o.b. Flushing, N. Y.

ALFRED W. BARBER LABORATORIES
34-04 Francis Lewis Blvd. Flushing, N. Y.

46. *Meters*

(Continued from page 150A)

Alfred W. Barber Labs., 34-04 Francis Lewis Blvd., Flushing, N.Y. D
See advertisement on page 152-A

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio F
See advertisement on page 151-A

Burlington Instrument Co., 1800 Fourth St., Burlington, Iowa A, B, F
See advertisement on page 185-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif. C
See advertisement on page 124-A

The Daven Co., 191 Central Ave., Newark 4, N.J. C
See advertisement on page 32-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif. B
See advertisement on page 126-A

Electronic Measurements Co., Red Bank, N.J. D
See advertisement on page 164-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y. D
See advertisement on page 138-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. B, D, E
See advertisement on page 51-A

Hickok Elec. Inst. Co., 10587 Dupont Ave., Cleveland 8, Ohio A-F
See advertisement on page 56-A

M. B. Mfg. Co., Inc., 331 East St., New Haven 11, Conn. A, C, E
See advertisement on page 152-A

Measurements Corp., 116 Monroe St., Boonton, N.J. D
See advertisement on page 159-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. D
See advertisement on page 19-A

Sound Apparatus Co., 233 Broadway, New York 7, N.Y. D
See advertisement on page 139-A

Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y. F
See advertisement on page 37-A

Stoddart Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif. B
See advertisement on page 173-A

Sylvania Electric Products, Inc., Emporium, Pa. D
See advertisement on page 89-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Westinghouse Electric Corp., P.O. Box 868 Pittsburgh 30, Pa. A, C, E, F
See advertisement on page 3-A

Mica, see Insulations.

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47. MICROPHONES

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46 Chicago 7, Ill.
See advertisement on page 134-A

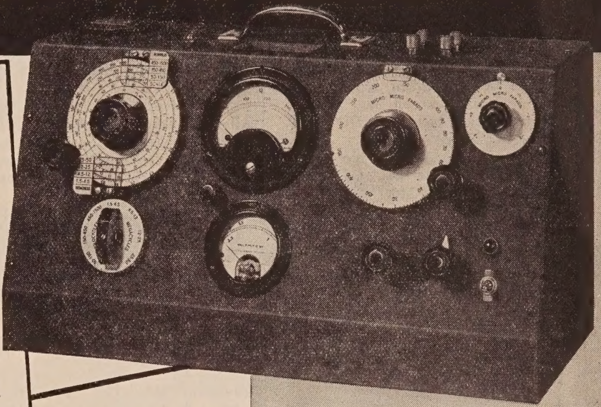
Amperite Co., 561 Broadway, New York 12, N.Y.
See advertisement on page 154-A

The Astatic Corp., P.O. Box 120, Conneaut, Ohio
See advertisement on page 79-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y.
See advertisement on page 148-A

(Continued on page 154A)

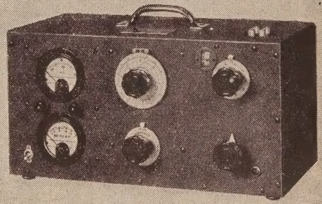
DEPENDABLE TEST AND MEASURING INSTRUMENTS THAT SHOULD BE INCLUDED IN YOUR NEW EQUIPMENT PLANS



After a distinguished record of service on the war front, these dependable, direct reading instruments are again available for civilian use, in the most exacting test and measuring operations for the design, development and production of Communication, Television and Radar equipment.

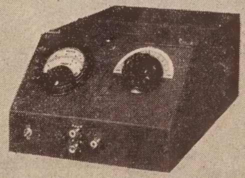
Q METER TYPE 160-A

Frequency Range: 50 kc. to 75 mc. may be extended with external oscillator down to 1 kc.
Range of Q Measurements, Coils: 50 to 625.
Accuracy: In general ± 5%
Range of Q Tuning Condenser: 30-450 mmf. (Vernier Condenser: ± 3 mmf.)



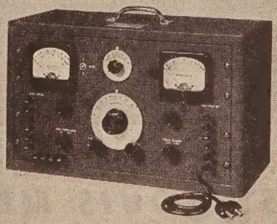
Q METER TYPE 170-A

Frequency Range: 30 mc. to 200 mc.
Range of Q Measurements, Coils: 100 - 1200
Accuracy: In general ± 10%
Range of Q Tuning Condenser: 10-60 mmf.



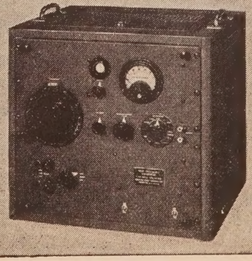
QX CHECKER TYPE 110-A

The factory counterpart of the Q Meter. Compares fundamental characteristics of inductance or capacitance and Q under production line conditions with a high degree of accuracy, yet quickly and simply. Insures uniform parts held within close tolerances. Frequency range 100 kc. to 25 mc.



FM SIGNAL GENERATOR
TYPE 150 SERIES

Type 150 A—Frequency 41-50 mc. and 1-10 mc.
Type 151 A—Frequency 30-40 mc. and 1-9 mc.
Type 152 A—Frequency 20-28 mc. and 1-5 mc.
Type 154 A—Frequency 27-39 mc. and 1-7 mc.
Developed specifically for use in design of F.M. equipment. Frequency and Amplitude Modulation available separately or simultaneously.



BEAT FREQUENCY GENERATOR
TYPE 140-A

A single compact instrument which provides wide frequency and voltage coverage of generated signals.
Frequency Range: 20 cycles tc 5 mc. in two frequency ranges.
Output Voltage Range: 1 millivolt to 32 volts.
Accuracy: ± 3%.
Output Power: One watt into external load.

For further information write for Catalog C

BOONTON RADIO *Corporation*
BOONTON, N. J.

DESIGNERS AND MANUFACTURERS OF THE "Q" METER . . . QX-CHECKER . . . FREQUENCY MODULATED SIGNAL GENERATOR . . . BEAT FREQUENCY GENERATOR . . . AND OTHER DIRECT READING TEST INSTRUMENTS

47. Microphones

(Continued from page 152A)

Ballantine Labs., Inc., Boonton, N.J.
See advertisement on page 20-A
Electro-Voice, Inc., 1239 So. Bend Ave., South Bend 24, Ind.
See advertisement on page 155-A
General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A
Radio Corp. of America Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A
Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio
See advertisement on page 150-A
St. Louis Microphone Co., P.O. Box 3440, Maplewood 17, Mo.
See advertisement on page 154-A

VELOCITY
P.G. DYNAMIC
THE FINEST MICROPHONES
AMPERITE
FOR PUBLIC ADDRESS & RECORDING
KONTAK MIKES
MICROPHONES THAT SURPASS THE HIGHEST REQUIREMENTS OF BROADCASTING, PUBLIC ADDRESS, AND RECORDING
Write for Catalog
AMPERITE COMPANY
561 BROADWAY • NEW YORK, N. Y.

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on page 42, 43-A

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48. **MONITORING EQUIPMENT:**
- **A. Frequency**
- **B. Modulation**

Andrew Co., 363 E. 75th St., Chicago 19, Ill.
See advertisement on page 110-A
Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill. A, B
See advertisement on page 154-A
Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J.
See advertisement on page 67-A
General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. A, B
See advertisement on page 51-A
Polarad Electronics Co., 135 Liberty St., New York 6, N.Y. A, B
See advertisement on page 156-A
Radio Corp. of America, Engineering Products Dept., Camden, N.J. A, B
See advertisement on page 19-A
Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass. A
See advertisement on page 81-A
Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y. A, B
See advertisement on page 12, 130, 142, 176-A
Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. A
See advertisement on page 42, 43-A

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49. **MOTOR-GENERATORS**
- **A. Dynamotors**
- **B. Motor-Generators**
- **C. Rotary-Converters**

Carter Motor Co., 2638 N. Maplewood Ave., Chicago 47, Ill. A, C
See advertisement on page 182-A
General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49
Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A-C
See advertisement on page 3-A

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50. **MOTORS, VERY SMALL**

Garrard Sales Corp., 401 Broadway, New York 13, N.Y.
See advertisement on page 166-A

(Continued on page 156A)

ST. LOUIS MICROPHONE CO.

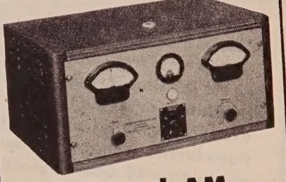
"Specialists in Microphone Manufacturing"

Our engineering staff is available to make recommendations and supply information regarding the application and performance of any St. Louis microphone. Give us your microphone problem.

Licensed under U.S. Patents of American Telephone and Telegraph Company and Western Electric Company.

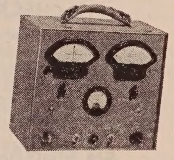
For *Free* Catalogue, Write P.O. Box 3440, Maplewood 17, Mo.

BUILT for ACCURACY and SERVICE by Doolittle



FM and AM FREQUENCY MONITORS

Direct reading. No charts or complicated calculations necessary. Available for all the frequencies used by the Emergency Services, including the new 152-162 mc. band. Designed for operation on 110 V. AC 60 cycles.
Also available for the New 88-108 mc. FM Broadcast Band.



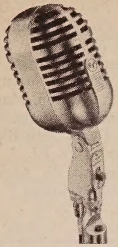
PORTABLE FM MONITOR

Model FD-10A is similar to the FD-9A except operates on 6 Volts D.C. Designed for checking FM Mobile Transmitting Equipment at point of operation. Supplied for operating on one or two frequencies between 30-44 mc.

Other DOOLITTLE equipment includes Station and Mobile Antennae, Station Control Units, Mobile Receivers and Transmitters, Station Receivers and Transmitters for the Emergency Services.

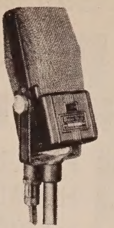
SEND FOR FULL DETAILS

Doolittle RADIO, INC.
7421 S. LOOMIS BOULEVARD
CHICAGO 36, ILLINOIS
BUILDERS OF PRECISION RADIO EQUIPMENT

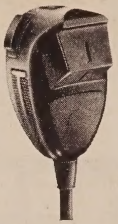


"Cardyne" Cardioid Dynamic
Models 731 and 726

"Cardax" Cardioid Crystal
Model 950



Bi-Directional Velocity
Models V-3, V-2, V-1



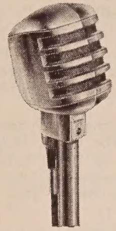
Differential Carbon
Hand-Held Model 205-S

No finer choice than

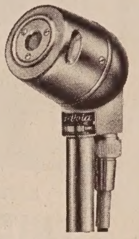
Electro-Voice

TODAY'S MOST COMPLETE LINE OF

MICROPHONES



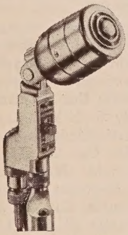
Model 610 Dynamic
Model 910 Crystal



Differential Dynamic
Model 606

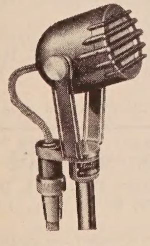
WITH important E-V developments such as the *Mechanophase** *Principle*, the *Differential*† *Principle*, the *Acoustalloy* Diaphragm ... ELECTRO-VOICE brings you the widest selection of quality microphones, for both general and specific applications. In the complete E-V line of uni-directional, bi-directional, and non-directional types, you can easily find exactly the right microphone to give you the sound pick-up and reproduction you want. A few models are shown here. ELECTRO-VOICE engineers are glad to help you on any special problems. *Send now for new E-V Catalog No. 101.*

*Patents Pending †Patent No. 2,350,010
Crystal Microphones Licensed under Brush patents.

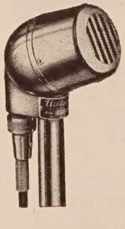


High Fidelity Dynamic
Model 630

Hand-Held Dynamic Model 600-D
Differential Dynamic Model 602



Versatile Dynamic
Model 640



General-Purpose Dynamic
Model 605

Differential Handset
Model 260 Carbon, Model 660 Dynamic

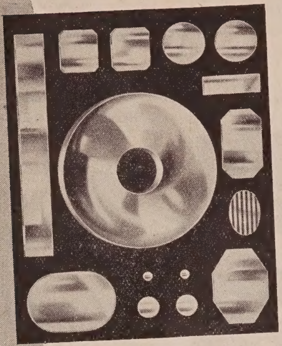
Comet Crystal
Model 902

NO FINER CHOICE THAN **Electro-Voice**

ELECTRO-VOICE, INC.
1239 South Bend Ave., South Bend 24, Ind.
EXPORT DIVISION
13 East 40th Street, New York 16, N.Y., U.S.A. Cables: Arlab

Front or Rear Surface

MIRRORS AND REFLECTORS



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Front or Rear Surface Mirrors and Reflectors made to your specifications. Closest optical and dimensional tolerances observed.

- EXCEPTIONAL REFLECTIVITY
- WILL NOT TARNISH
- OPAQUE OR SEMI-TRANSPARENT
- HEAT RESISTANT
- PROMPT SERVICE

We invite your inquiries. Samples and quotations will be submitted promptly.

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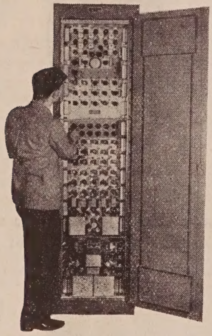
ZENITH OPTICAL LABORATORY

SPECIALISTS IN VACUUM DEPOSITION

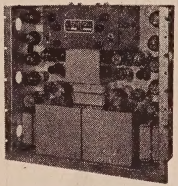
Z OPTICAL LAB.

123 WEST 64th STREET
NEW YORK 23, N. Y.

Polarad Electronics Company



Synchronizing Generator for Television Transmitters and Receiver Testing.



Dual Regulated Power Supplies 250-300 Volts 400 Ma. Each. Ripple Less Than .001 Percent.

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MICROWAVE SYSTEMS

COMMUNICATIONS SYSTEMS

CONSULTANT SERVICE TO MANUFACTURERS

TELEVISION and SOUND BROADCAST

TEST EQUIPMENT

POLARAD ELECTRONICS COMPANY
135 LIBERTY STREET • NEW YORK 6, N. Y.
Phone: REctor 2-0534

50. Motors, Very Small
(Continued from page 154A)

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Webster-Chicago Corp., 5610 Bloomingdale Ave., Chicago 39, Ill.
See advertisement on page 170-A

Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
See advertisement on page 3-A

51. MOULDED PRODUCTS

- **A. Cabinets**
- **B. Insulators**
- **C. Knobs, etc.**
- **D. Plastic Parts**
- **E. Phenolic Sheet**

Alden Products Co., 117 N. Main St., Brockton 64D, Mass. C, D Bakelite
See advertisement on page 175-A

American Lava Corp., Chattanooga 5, Tenn.
See advertisement on page 7-A

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill. D Bakelite
See advertisement on page 33-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y. D
See advertisement on page 148-A

Continental-Diamond Fibre Co., 16 Chapel St., Newark 48, Del. D
See advertisement on page 147-A

Erie Resistor Corp., 640 W. 12th St., Erie, Pa. C, D
See advertisement on page 83-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. D
See advertisement on page 39-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. C
See advertisement on page 51-A

Hawley Products Co., 333-339 N. 6th St., St. Charles, Ill. A, D
See advertisement on page 114-A

Premier Crystal Labs., 51 Park Row, New York 7, N.Y. E
See advertisement on page 129-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

S. S. White Dental Mfg. Co., Industrial Division, 10 E. 40th St., New York 16, N.Y. D
See advertisement on page 140-A

51A. OPTICAL SCREENS, MIRRORS AND MATERIALS

Patterson Screen Div., E. I. Du Pont De Nemours & Co., Inc., Towanda, Pa.
See advertisement on page 157-A

Zenith Optical Laboratory, 123 W. 64th St., New York 23, N.Y.
See advertisement on page 156-A

52. OSCILLATORS:

- **A. Audio Frequency**
- **B. Radio Frequency**
- **C. Square Wave Generators**

Aircraft Radio Corp., Boonton, N.J. B
See advertisement on page 105-A

Alden Products Co., 117 No. Main St., Brockton 64D, Mass. A
See advertisement on page 175-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46 Chicago 7, Ill. A, B
See advertisement on page 134-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. A, C
See advertisement on page 185-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. A
See advertisement on page 178-A

The Allen D. Cardwell Mfg. Corp., 81 Prospect St., Brooklyn 1, N.Y. B
See advertisement on page 118-A

Collins Radio Co., 855 35th St. S.E., Cedar Rapids, Iowa B
See advertisement on page 53, 54, 55-A

Communication Measurements Labs., 120 Greenwich St., New York 6, N.Y. A
See advertisement on page 158-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y. A-C
See advertisement on page 45-A

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J.
See advertisement on page 67-A

Electronic Measurements Co., Red Bank, N.J. A-C
See advertisement on page 164-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y. A
See advertisement on page 138-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass. B, C
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. A, B
See advertisement on page 51-A

Hickok Elec. Inst., Co., 10587 Dupont Ave., Cleveland 8, Ohio A, B
See advertisement on page 56-A

Measurements Corp., 116 Monroe St., Boonton, N.J. B, C
See advertisement on page 159-A

Polarad Electronics Co., 135 Liberty St., New York 6, N.Y. A, B, C
See advertisement on page 156-A

Press Wireless Mfg., Corp., 1475 Broadway, New York 18, N.Y. B
See advertisement on pages 40, 41-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. A-C
See advertisement on page 19-A

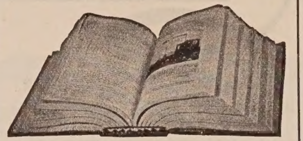
Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y. A-C
See advertisement on page 12, 130, 142, 176-A

Sylvania Electric Products, Inc., Emporium, Pa. A-C
See advertisement on page 89-A

United Transformer Corp., 150 Varick St., New York 13, N.Y. A
See advertisement on page 23-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. A
See advertisement on page 42, 43-A



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Price $2.50
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You may have a volume number or your name stamped in gold for 50 cents additional.

Remittance should accompany your order

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330 West 42nd Street
New York, N.Y.

53. OSCILLOGRAPHS & ACCESSORIES

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46 Chicago 7, Ill.
See advertisement on page 134-A

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J.
See advertisement on page 67-A

Electronic Measurements Co., Red Bank, N.J
See advertisement on page 164-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Hickok Elec. Inst. Co., 10587 Dupont Ave., Cleveland 8, Ohio
See advertisement on page 56-A

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See advertisement on page 156-A

Radio Corp. of America Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

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See advertisement on page 89-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on pages 42, 43-A

54. PANELS

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill.
See advertisement on page 134-A

(Continued on page 160A)

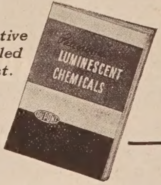
DEPENDABLE PHOSPHORS

● High Grade Patterson Luminescent Chemicals demanded for cathode ray tubes for television, radar and similar applications are now available in quantity.

The Patterson Screen Division of the Du Pont Company has for more than thirty years been the leading producer of fluorescent materials for x-ray screens. Since, in radiographic diagnosis, life itself may often depend upon the results, phosphors used in screen manufacture must be of the highest quality.

Today, Patterson produces these superior phosphors (singly or in blends) to meet a wide variety of requirements. They are made under exacting conditions and by carefully controlled methods which assure uniformity of emission, color and grain size. They fill specific needs as to shades, grain structure and length of afterglow. Their quality may be depended upon for all manufacturing and laboratory experimental research activities. Patterson Screen Division of E. I. du Pont de Nemours & Co. (Inc.), Towanda, Pa.

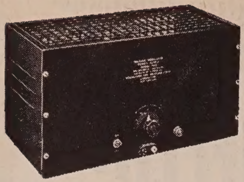
This descriptive booklet mailed upon request.



Patterson Luminescent Chemicals

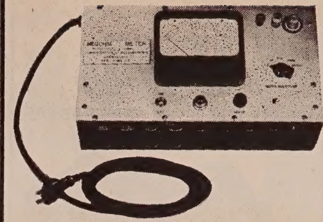
DU PONT

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY



CML 1100 VOLTAGE REGULATED POWER SUPPLY

Table model; continuous operation, excellent regulation, extremely low noise level.

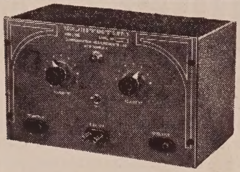


CML 1500 MEGOHM METER

Portable; offers range from 400,000 ohms to 100,000 megohms in five ranges on single scale 4-inch meter.

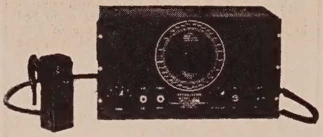
CML 1420
ELECTRONIC GENERATOR

Offers frequency stability better than 2% after initial warm-up.



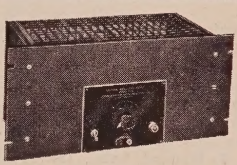
CML 1115
DUAL POWER SUPPLY

Provides independent "B" and "C" voltages. "B" from 150 to 300 V. "C" from 0 to 65 V.



CML 1200 STROBOSCOPE

For slow motion study and observation of stresses and strains under dynamic conditions.



CML 1110 POWER SUPPLY

Designed for rack mounting. Can be used as source of "B" or "C" voltage.

CML ELECTRONIC DEVELOPMENTS

...for Laboratory and Production Line

From the famous Rotobridge to the more recently developed Dual Power Supply, the products created by CML offer invaluable aid—on the production line, safeguarding the working efficiency of your electronic instruments—in the laboratory, assisting in the development of new products and technics.

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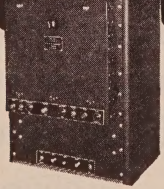
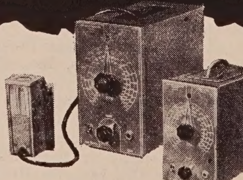


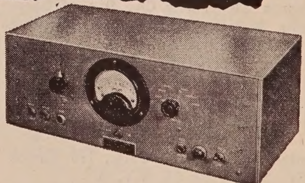
ROTOBRIDGE

Mass production tester. Checks wiring errors, resistance and reactance values —right on assembly line.



CML 1210
PORTABLE STROBOSCOPE

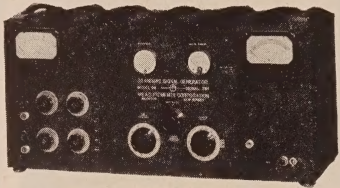
Employs novel circuit using self-blocking oscillator. Extremely compact— weighs only 19½ lbs.



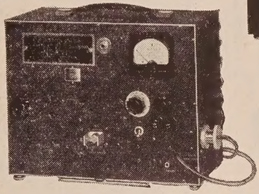
CML 1800
A-F FREQUENCY METER

and Tachometer—Accurately measures speeds of rotating or reciprocal mechanisms.

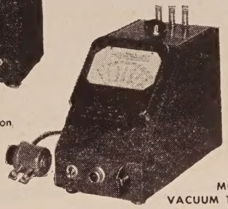
Laboratory Standards



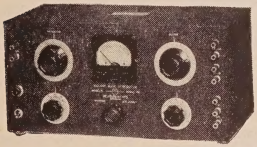
MODEL 84
U.H.F. STANDARD SIGNAL GENERATOR
300 to 1000 megacycles, AM and Pulse Modulation



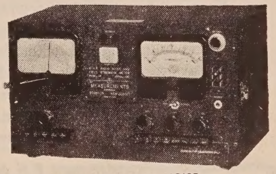
MODEL 78-B STANDARD SIGNAL GENERATOR
Two Frequency Bands between 15 and 250 megacycles



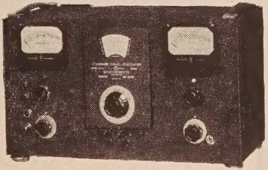
MODEL 62
VACUUM TUBE VOLTMETER
0 to 100 volts AC, DC and RF



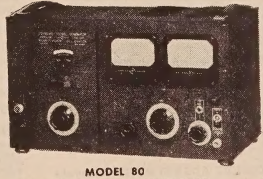
MODEL 71 SQUARE WAVE GENERATOR
5 to 100,000 cycles
Rise Rate 400 volts per microsecond



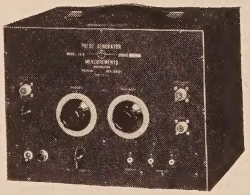
MODEL 58 U.H.F. RADIO NOISE
AND FIELD STRENGTH METER
15 to 150 megacycles



MODEL 65-B
STANDARD SIGNAL GENERATOR
75 to 30,000 kilocycles
M.O.P.A., 100% Modulation



MODEL 80
STANDARD SIGNAL GENERATOR
2 to 400 megacycles
AM and Pulse Modulation



MODEL 79-B PULSE GENERATOR
50 to 100,000 cycles
0.5 to 40 microsecond pulse width

Standards are only as reliable as the reputation of their maker.

MEASUREMENTS CORPORATION
BOONTON • NEW JERSEY

new...
improved
portable

Radiotone
HOLLYWOOD

"America's
Finest Portable Recorder"
illustrated—Model RA-116

Here's the answer to your recording problems in a single, compact, portable unit! Radiotone, a pioneer in instantaneous recording, with over 10-years experience backed by thousands of units in service is now manufactured by Ellinwood Industries, famous for Design Simplicity—Dependability. Check these features—note the improvements—then send for name of local representative and complete, illustrated catalog describing the RA-116 and other portable models.

FEATURES

THE RA-116—Produces acetate recordings of professional quality from 6" up to 16". Accommodates 17½" masters for 16" pressings.

DUAL SPEED—78 or 33⅓ rpm. instantly selected by an improved lever shift which locks into position.

LEAD SCREW—Positive feed overhead lead screw insures perfect grooves and dependable operation. Direction of cut can be changed instantly from outside-in to inside-out. Run-in grooves may be made when desired.

VARIABLE LINES—The number of lines per inch on the disc may be varied from 90 to 130.

DEPTH OF CUT ADJUSTMENT—Accurate regulation of pressure at the cutting stylus is obtained by turning a calibrated knob.

DRIVE SYSTEM—Radiotone has perfected a positive silent drive insuring perfect motion, correct pitch, and stability. Moving parts have been reduced to a minimum. Speed accuracy is maintained within .3% at 78 rpm. and .4% at 33⅓ rpm. Single revolution accuracy is maintained within .1%

TURNTABLE—A 16" dynamically balanced cast aluminum turntable is used. The hardened steel driving shaft revolves on a single steel ball at the bottom of a 6" cast bearing well which contains two bronze "oilite type" bearings.

DUO-CHROMATIC EQUALIZERS—Two controls allow continuously variable response over both high and low registers.

MULTIPLE INPUT CHANNELS—Two high impedance input channels are provided. (Low impedance also available.) Two jacks are for microphone use and have an overall gain of 130 DB. The other two have an overall gain of 80 DB, which is suitable for most any crystal, magnetic or dynamic pickup as well as a zero level line.

MIXERS—Two independent volume controls are provided and may be operated simultaneously.

VOLUME INDICATOR—A volume indicator meter is provided for accurate monitoring of recording level.

OUTPUTS—All output impedances are 8 ohms.

AMPLIFICATION STAGES—The amplifier has four stages. The first one is a dual pre-amplifier utilizing one 7F7 tube which provides the two microphone inputs. The second is the duo-harmonic equalizer stage also utilizing one 7F7 tube. The third uses two 7F7 tubes in push-pull as phase inverted degenerative resistance coupled drivers. The fourth is the power output stage using two 7C5 tubes in push-pull class "A" feeding an extra heavy duty output transformer. Inverse feedback is employed to insure stability. Power output is 14 Watts. Harmonic distortion at cutting level is less than 1%.

RADIO—A radio receiver designed for recording is available as an accessory to the RA-116 and space is provided by removing the panel at the left side of the amplifier.

POWER REQUIREMENTS—110-120 Volts. 50 or 60 cycles AC. 150 Watts. May be used on DC by addition of converter.

SPEAKER—Heavy duty 12-inch high fidelity, permanent magnet dynamic type.

FINISH—Handsome leatherette case with chromium hardware. Exterior metal parts finished in baked crackle lacquer with chrome trim.

ELECTRONICS DIVISION
Ellinwood
INDUSTRIES

170 WEST SLAUSON AVE., LOS ANGELES 3, CALIF.

54. Panels

(Continued from page 157A)

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

Par-Metal Products Corp., 32-62 49th St., Long Island City 3, N.Y.
See advertisement on page 166-A

Pierce Paper Products Corp., 2712 Auburn St., Rockford, Ill.
See advertisement on page 161-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

55. PHONOGRAPH PICK-UPS

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kans.
See advertisement on page 4, 5-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill.
See advertisement on page 134-A

The Astatic Corp., P.O. Box 120 Conneaut, Ohio
See advertisement on page 79-A

Audak Co., 500 Fifth Ave., New York 18, N.Y.
See advertisement on page 168-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill.
See advertisement on page 27-A

Ellinwood Industries, 170 W. Slauson Ave., Los Angeles 3, Calif.,
See advertisement on page 160-A

Garrard Sales Corp., 401 Broadway, New York 13, N.Y.
See advertisement on page 166-A

Radio Corp. of America Engineering Products Dept., Camden N.J.
See advertisement on page 19-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on pages 42, 43-A

56. PILOT LIGHTS & ASSEMBIES

Alden Products Co., 117 No. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.
See advertisement on page 134-A

A. W. Franklin Mfg. Corp., 175 Varick St., New York 14, N.Y.
See advertisement on page 109, 175-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

National Union Radio Corp., 57 State St., Newark 2, N.J.
See advertisement on page 59-A

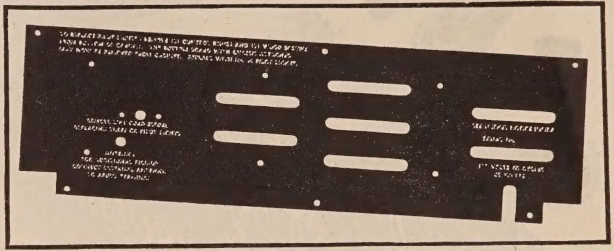
Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

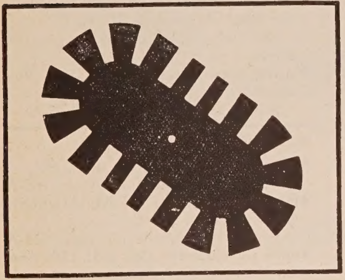
Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

(Continued on page 162A)

KEEP PRODUCTION MOVING with Pierce SERVICE

FAST DELIVERY at REASONABLE PRICES!





LOOP ANTENNA FRAMES • CABINET BACKS
(complete with envelope protector)

BAFFLES • LOUD SPEAKER GASKETS

Die cut and printed complete to your specifications from

***NON-METALLIC* PULPBOARD, FIBRE BOARD BINDERS BOARD, NEWS OR CHIPBOARD**

paraffine treated or plain.

Tested for non-conductive properties.

Manufacturing processes include lining of board for special papers.

Don't let shortages of the above items bottleneck your production. For ON-TIME-DELIVERY, call on PIERCE. Years of experience, plus accelerated War Production, has given us the "KNOW-HOW" and trained personnel to expedite your job and produce accurate, superior work.

The modern PIERCE factory is amply equipped with up-to-date machinery for Die cutting by Rotary, Platen and Punch Press or Hollow Die Methods. **A complete die-making department and an *adequate supply of board insure prompt delivery!***

SUBMIT SAMPLE OR SPECIFICATIONS FOR IMMEDIATE QUOTATIONS—NO OBLIGATION

Pierce PAPER PRODUCTS COMPANY

2712 AUBURN STREET ROCKFORD, ILLINOIS

SUBSIDIARIES

Charles H. Luck Envelope Company, Chicago. Capital Envelope Company, St. Paul.

Just a few of the thousands of Radio Parts manufactured by INSULINE

ICA is now making immediate deliveries on its entire 1946 line—everything from tiny acorn sockets to antennas; each item a vastly improved unit.

It will pay you to know the complete 1946 ICA line. Write Department M-2 today for the two new 1946 ICA catalogs—one on Antennas the other on the new ICA Parts.

INSULINE CORP. OF AMERICA ICA TRADE MARK

insuline
CORPORATION OF AMERICA
INSULINE BUILDING • LONG ISLAND CITY, N. Y.
More than a quarter-century of Quality production.

ARMY (E) NAVY

56. Pilot Lights & Assemblies
(Continued from page 160A)

Westinghouse Elec. Corp., Lamp Div., MacArthur Plaza, Bloomfield, N.J.
See advertisement on page 30, 31-A

57. PLASTICS:

A. Raw Materials for Moulding
B. Rods
C. Sheets

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill. B, C
See advertisement on page 33-A

Continental-Diamond Fibre Co., 16 Chapel St., Newark 48, Del. B, C
See advertisement on page 147-A

Patterson Screen Div., E. I Du Pont De Nemours & Co., Inc., Towanda, Pa. A-C
See advertisement on page 157-A

General Electric Co., Electronics Dept. Schenectady 5, N.Y.
See advertisement on pages 48, 49-A

Insulation Mfg. Corp., 565 W. Washington Blvd., Chicago 6, Ill. B, C
See advertisement on page 144, 145-A

Westinghouse Electric Corp., P.O. Box 868 Pittsburgh 30, Pa. B, C
See advertisement on page 3-A

58. PLUGS

Aircraft Radio Corp., Boonton, N.J.
See advertisement on page 105-A

Alden Products Co., 117 No. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.
See advertisement on page 178-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y.
See advertisement on page 148-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

A. W. Franklin Mfg. Corp., 175 Varick St., New York 14, N.Y.
See advertisement on page 109A, 175-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N.Y.
See advertisement on page 64-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill.
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on page 42-A, 43-A

59. POWER SUPPLIES

Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 185-A

(Continued on page 164A)

Do Radio Engineers Know What You Make?

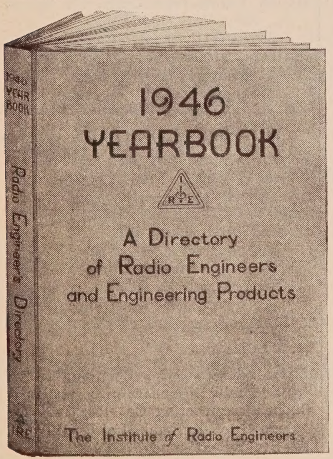
When all operations are "In the Family"
QUALITY CONTROL is at its best
CHICAGO TRANSFORMER
NO PRIORITY
For Harco Radio MASTS & TOWERS
IMMEDIATE SHIPMENTS
HARCO
Performance Engineered TO THE Application
Rauland

Now—A Radio Engineer's Directory

MARKET

Radio Engineers control the technical buying of a two-billion-dollar radio-electronic and radar market. These men alone are competent to do the specifying and purchasing of complicated radio tubes, components, and materials that only a trained and experienced engineer really understands.

More than 15,000 radio-and-electronic engineers and engineers in training, will receive and use the 1946 I.R.E. Yearbook. This membership roster and radio product index has a close personal relationship to each engineer because it lists the reader himself and his fellow members in the radio profession. It is his own property with a permanent place on his desk — at his finger-tips, a reference to both friends and radio-product data he needs and wants.


1946 YEAR BOOK
Radio Engineer's Directory
IRE
1946
YEARBOOK
IRE
A Directory of Radio Engineers and Engineering Products
The Institute of Radio Engineers

FEATURES

- Complete membership list of The Institute of Radio Engineers.
- An alphabetical list of over 2000 firms serving the radio-electronic industry, with addresses, and —
- Names of the chief engineers of most of these firms, plus,
- Coding for 25 basic product classifications of each.
- Detailed product classifications (more than 100 headings) for all kinds of radio-electronic components and equipment listed for the firms advertising in the Yearbook.
- PRODUCT ADVERTISING of equipment and component-parts manufacturers, displaying and giving specifications for their products and providing engineering data.

RATES			For "Proceedings of I.R.E. Contract Advertisers"	
Space	Rate	Size	6 Times	12 Times
1 page	$250.	7 " x 10 "	$225.	$200.
⅔ page	180.	4⅝" x 10 "	160.	140.
⅓ page	100.	2¼" x 10 " 4⅝" x 4⅞"	90.	80.
⅙ page	60.	2¼" x 4⅞" 4⅝" x 2⅜"	55.	50.

Agency Discount 15%. Cash Discount 2% 10 days.

ANNUAL
I.R.E. YEARBOOK

THE INSTITUTE OF RADIO ENGINEERS
303 West 42nd Street, New York 18, N. Y. ME. 3-5661

WILLIAM C. COPP — *National Advertising Manager*

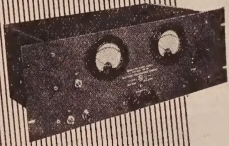
SCOTT KINGWILL
Central States Representative
35 E. Wacker Drive
Chicago 1

DUNCAN A. SCOTT & COMPANY
Pacific Coast Representative
Mills Building
San Francisco 4
448 So. Hill Street
Los Angeles 13

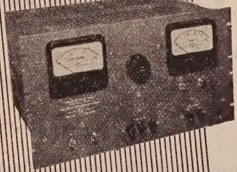
Reliable Regulated Power Supplies
FOR LABORATORY OR PRODUCTION TESTING

ELECTRONIC MEASUREMENTS COMPANY presents four new regulated power supplies designed to cover a wide range of applications. These units provide a source of regulated and extremely well filtered D.C. voltage. All models feature the following advantages:

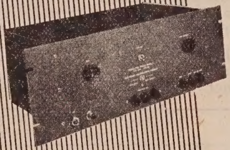
- Output Voltage continuously variable without switching.
- Regulation within 1% for line or load changes.
- Low ripple, low output impedance and freedom from transients.
- Compactness and versatility.



MODEL 200-B
- Output voltage:
  0.325 V.D.C. @ 125 ma. regulated
  6.3 V.A.C. @ 6 amps. unregulated
- Regulation: Within 1% from 20-325 volts
- Hum: Within 10 millivolts
- Meters: 0-500 V.D.C.
  0-150 ma. D.C.
- Negative ground



MODEL 204-A
- Output voltage:
- 0-500 V.D.C. @ 300 ma. regulated
  6.3 V.A.C. @ 6 amps, unregulated
- Regulation: Within 1% from 30-500 volts
- Hum: Within 10 millivolts
- Meters: 0-500 V.D.C.
  0-300 ma. D.C.
- Negative or positive ground



MODEL 205-A
- Output voltages:
  100-325 V.D.C. @ 150 ma. regulated
  0-150 V.D.C. @ 5 ma. regulated by VR tube
  6.3 V.A.C. @ 6 amps. unregulated
- Regulation: Within 1% from 100-325 V.D.C.
- Hum: Within 10 millivolts
- Meters: None
- Negative or positive of high voltage may be grounded

MODEL 207-B (Not Illustrated)
- Output voltage:
  200-1000 V.D.C. @ 500 ma. regulated
- Regulation: Within 1% from 200-1000 volts
- Hum: Within 20 millivolts
- Meters: 0-1000 V.D.C.
  0-500 ma. D.C.
- Negative ground

Models 200-B, 204-A, 205-A and 207-B power supplies are designed for a line voltage of from 105 to 125 volts at 50-60 cycles. Detailed specifications for any of the above units will be forwarded upon request.

E M
ELECTRONIC MEASUREMENTS COMPANY
Red Bank • New Jersey
VACUUM TUBE VOLTMETERS • POWER SUPPLIES • SIGNAL GENERATORS

59. Power Supplies

(Continued from page 162A)

Amer. Television & Radio Co., 300 E. 4th St., St. Paul 1, Minn.
See advertisement on page 184-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.
See advertisement on page 178-A

Carter Motor Co., 2638 N. Maplewood Ave., Chicago 47, Ill.
See advertisement on page 182-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

Communication Measurements Labs., 120 Greenwich St., New York 6, N.Y.
See advertisement on page 158-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y.
See advertisement on page 45-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

The Langevin Co., Inc., 37 W. 65th St., New York 23, N.Y.
See advertisement on page 165-A

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y.
See advertisement on page 40-A, 41-A

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y.
See advertisement on page 104-A

Radio-Television Inst., Inc., 480 Lexington Ave., New York 17, N.Y.
See advertisement on page 146-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill.
See advertisement on page 87-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Telequip Radio Co., 1901-1907 S. Washtenaw Ave., Chicago 8, Ill.
See advertisement on page 106-A

United Transformer Corp., 150 Varick St., New York 13, N.Y.
See advertisement on page 23-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

60. PUMPS, VACUUM

Eastern Engineering Co. 186 Fox St., New Haven 6, Conn.
See advertisement on page 36-A

Eitel-McCullough, Inc., 1123 San Mateo Ave., San Bruno, Calif.
See advertisement on page 75-A

Westinghouse Electric Corp., P.O. Box 868 Pittsburgh 30, Pa.
See advertisement on page 3-A

61. RACKS

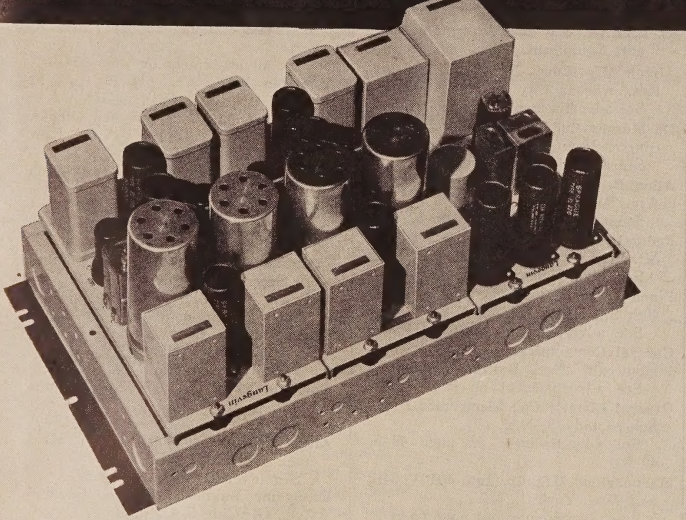
Aircraft Radio Corp., Boonton, N.J.
See advertisement on page 105-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

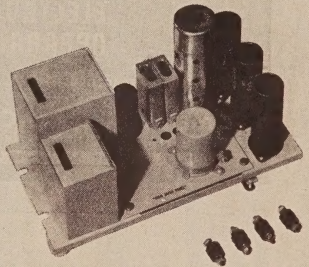
(Continued on page 166A)

STUDIO AMPLIFIERS

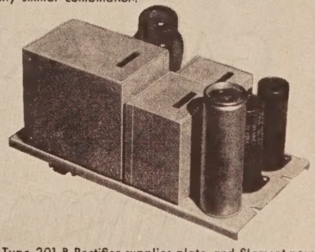
Engineered for High Quality Performance and Dependable Service



AT LEFT: Two Langevin Type 111-A Dual Pre-Amplifiers and one Langevin Type 102-A Amplifier on a Type 3-A Mounting Frame. This unit provides four pre-amplifiers and one line amplifier, or three pre-amplifiers, one booster amplifier and one line amplifier, all occupying 10½ in. of rack mounting space. An external power supply, the Langevin 201-B Rectifier, as shown below, is required. The Type 3-A Mounting Frame can be housed in a Type 201-A Cabinet, for wall mounting, if desired.



The Type 106-A Amplifier is a two-stage, fixed medium gain, low noise pre-amplifier, or booster amplifier, for use in high-quality speech input systems. The Type 106-A can be mounted on one-third of the space available on a Type 3-A Mounting Frame in combination with two Type 111-A Pre-Amplifiers, or in any similar combination.



The Type 201-B Rectifier supplies plate and filament power for the Langevin Types 102, 106, 111 and similar amplifiers from a 105-125 volt, 50-60 cycle AC source. The ripple voltage of the 201-B Rectifier is 0.04% at full power output 75MA and 0.02% at a drain of 30 milliamperes.

Langevin Audio Transmission Facilities are designed and built to have the extended frequency response, noise and distortion levels required in the F.C.C. Regulations for FM transmission.

In complying with these regulations too much emphasis cannot be placed on the quality of the transformers that are a part of the audio system. Noise, for instance, is largely associated with the input transformers—distortion, with the output transformers—and frequency response with both. Therefore, the transformers in Langevin equipment are manufactured by us—and are held to a specified tolerance—so that frequency response, noise and distortion levels of the entire system are well within requirements.

"Worthy of an Engineer's Careful Consideration"

The Langevin Company

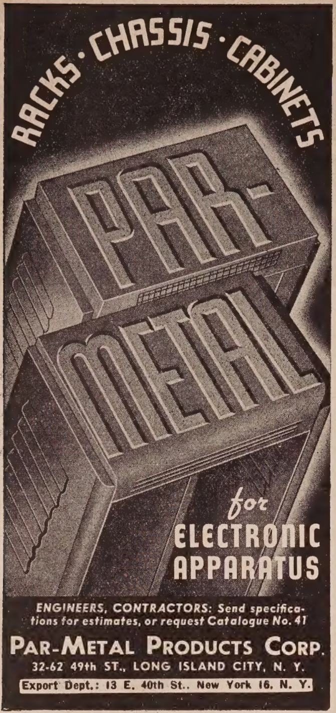
INCORPORATED

SOUND REINFORCEMENT AND REPRODUCTION ENGINEERING

NEW YORK
37 W. 65 St., 23

SAN FRANCISCO
1050 Howard St., 3

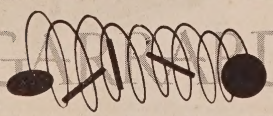
LOS ANGELES
1000 N. Seward St., 38



ENGINEERS, CONTRACTORS: Send specifications for estimates, or request Catalogue No. 41

PAR-METAL PRODUCTS CORP.
32-62 49th ST., LONG ISLAND CITY, N. Y.
Export Dept.: 13 E. 40th St., New York 16, N. Y.

GARRARD
costs a bit more
because it's the finest
GARRARD
GARRARD
GARRARD



GARRARD
GARRARD
automatic record changer
Write for new catalog:
GARRARD SALES CORP., 401 Broadway, N. Y.

61. Racks

(Continued from page 164A)

Par-Metal Products Corp., 32-62 49th St., Long Island City 3, N.Y.
See advertisement on page 166-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on page 12-A, 130-A, 142-A, 176-A

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62. RADAR. See also Aircraft & Airport Equipment.

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kan.
See advertisement on page 4-A, 5-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y.
See advertisement on page 45-A

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J.
See advertisement on page 67A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

Finch Telecommunications, Inc., 10 E. 40th St., New York 16, N.Y.
See advertisement on page 137-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y.
See advertisement on page 65-A

Hickok Elec. Inst. Co., 10587 Dupont Ave., Cleveland 8, Ohio
See advertisement on page 56-A

Polarad Electronics Co., 135 Liberty St., New York 6, N.Y.
See advertisement on page 156-A

Radio Corp. of America Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio
See advertisement on page 150-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 121-A

Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y.
See advertisement on page 37-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y.
See advertisement on page 42-A, 43-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.
See advertisement on page 3-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
See advertisement on page 47-A

63. RADIO RECEIVERS:

- A. Broadcast
- B. Communications
- C. Fixed Frequency
- D. Frequency Modulation
- E. Special Purpose
- F. Television

Aircraft Radio Corp., Boonton, N.J. B, E
See advertisement on page 105-A

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kans.
See advertisement on page 4-A, 5-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A, B, D
See advertisement on page 134-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. A-D
See advertisement on page 185-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y. E
See advertisement on page 148-A

Collins Radio Co., 855 35th St. S.E., Cedar Rapids, Iowa B, E
See advertisement on page 53-A, 54-A, 55-A

Communication Measurements Labs., 120 Greenwich St., New York 6, N.Y. E
See advertisement on page 158-A

Concord Radio Corp., 901 W. Jackson Blvd., Chicago 7, Ill. A, D
See advertisement on page 135-A

Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill. B, C
See advertisement on page 154-A

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J. E, F
See advertisement on page 67-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif. E
See advertisement on page 126-A

Electronic Measurements Co., Red Bank, N.J. C-E
See advertisement on page 164-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A-E
See advertisement on page 39-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y. F
See advertisement on page 138-A

General Communication Co., 530 Commonwealth Ave Boston 15, Mass. B, E
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y. A, B, D, F
See advertisement on page 48-A, 49-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y. B-E
See advertisement on page 65-A

The Langevin Co., Inc., 37 W. 65th St. New York 23, N.Y. E
See advertisement on page 165-A

Measurements Corp., 116 Monroe St., Boonton, N.J. E
See advertisement on page 159-A

Panoramic Radio Corp., 242 W. 55th St., New York 19, N.Y. B, E
See advertisement on page 17-A

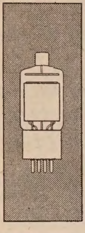
Polarad Electronics Co., 135 Liberty St., New York 6, N.Y. E
See advertisement on page 156-A

(Continued on page 168A)

GRID CONTROL RECTIFIERS

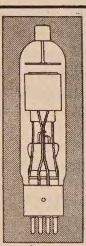
RECTIFIERS

ELECTRONS
INC.
NEWARK, N. J.



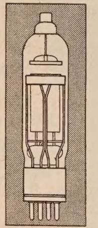
GRID CONTROL RECTIFIER
EL C1B

Filament Volts	2.5
Filament Amperes	6.3
D.C. Output (Amps.)	1.0
Peak Anode Current	8.0
Peak Forward Volts	450
Peak Inverse Volts	700



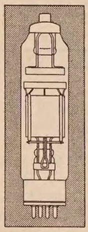
GRID CONTROL RECTIFIER
EL C3J

Filament Volts	2.5
Filament Amperes	9.0
D.C. Output (Amps.)	2.5
Peak Anode Current	30.0
Peak Forward Volts	750
Peak Inverse Volts	1250



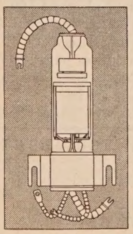
GRID CONTROL RECTIFIER
EL C6J

Filament Volts	2.5
Filament Amperes	21.0
D.C. Output (Amps.)	6.4
Peak Anode Current	77.0
Peak Forward Volts	750
Peak Inverse Volts	1250



GRID CONTROL RECTIFIER
EL C6C

Filament Volts	2.5
Filament Amperes	24.0
D.C. Output (Amps.)	6.4
Peak Anode Current	77.0
Peak Forward Volts	2000
Peak Inverse Volts	4000

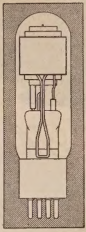


GRID CONTROL RECTIFIER
EL C16J

Filament Volts	2.5
Filament Amperes	31.0
D.C. Output (Amps.)	12.0
Peak Anode Current	100.0
Peak Forward Volts	750
Peak Inverse Volts	1250

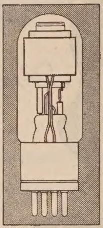
FULL WAVE RECTIFIER
EL 1C

Filament Volts	2.5
Filament Amperes	6.0
D.C. Output (Amps.)	1.0
Peak Anode Current	4.0
A.C. Volts/Anode	250
Peak Inverse Volts	725



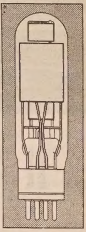
FULL WAVE RECTIFIER
EL 3C

Filament Volts	2.5
Filament Amperes	11.5
D.C. Output (Amps.)	2.5
Peak Anode Current	10.0
A.C. Volts/Anode	250
Peak Inverse Volts	725



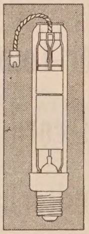
FULL WAVE RECTIFIER
EL 6C

Filament Volts	2.5
Filament Amperes	17.0
D.C. Output (Amps.)	6.4
Peak Anode Current	25.6
A.C. Volts/Anode	250
Peak Inverse Volts	725



HALF WAVE RECTIFIER
EL 16B

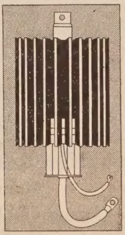
Filament Volts	2.5
Filament Amperes	30-45
D.C. Output (Amps.)	16.0
Peak Anode Current	96.0
A.C. Volts/Anode	220
Peak Inverse Volts	620



HALF WAVE RECTIFIER
EL 60B

Filament Volts (Heater type)	115
Heater Amperes	1.3
D.C. Output (Amps.)	50
Peak Anode Current	300
Peak Inverse Volts	1250

Metal Envelope, Convection Air Cooled



PERFORMANCE AND CHARACTERISTICS ARE INDEPENDENT OF AMBIENT TEMPERATURES

ELECTRONS, INC., 129 SUSSEX AVE., NEWARK 4, N. J.

Audax

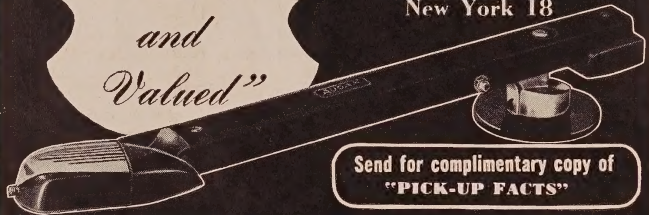
microdyne

"The Standard by Which Others Are Judged and Valued"

Famous the world over for *fac-simile* realism

AUDAK COMPANY

500 Fifth Avenue, New York 18

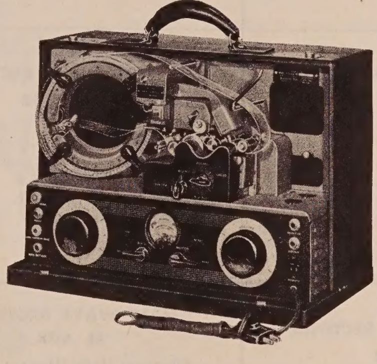


Send for complimentary copy of "PICK-UP FACTS"

"Creators of Fine Electro-Acoustical Apparatus since 1915"

The HART: FILM RECORDER

For Your Many Recording and Monitoring Needs



Our services are now available to you and your recording problems as they were to the armed forces during war time.

Manufacturers of the HART Film Recorders (RECORDGRAPHS) and Magnetic Recorders.

FREDERICK HART & CO., INC.

A Subsidiary of American Type Founders

350 Madison Ave., New York 17, N.Y. *Poughkeepsie, N.Y.*

63. Radio Receivers
(Continued from page 166A)

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y. B-E
See advertisement on page 40-A, 41-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. B, E
See advertisement on page 19-A

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y. B, C, E
See advertisement on page 104-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass. B, D, E, F
See advertisement on page 81-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y. E
See advertisement on page 12-A, 130-A, 142-A, 176-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. E
See advertisement on page 121-A

Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y. B, E
See advertisement on page 37-A

Stoddart Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif. B
See advertisement on page 173-A

Sylvania Electric Products, Inc., Emporium, Pa. E
See advertisement on page 89-A

Telequip Radio Co., 1901-1907 S. Washtenaw Ave., Chicago 8, Ill. A, D, F
See advertisement on page 106-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. B, E
See advertisement on page 42-A, 43-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A, E
See advertisement on page 3-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo. A, B, E
See advertisement on page 47- A

64. RECORD CHANGING MECHANISMS

Aireon Mfg. Corp., Funston & Fairfax Rds. Kansas City 15, Kan.
See advertisement on page 4-A, 5-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill.
See advertisement on page 134-A

Garrard Sales Corp., 401 Broadway, New York 13, N.Y.
See advertisement on page 166-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Webster-Chicago Corp., 5610 Bloomingdale Ave., Chicago 39, Ill.
See advertisement on page 170-A

65. RECORDING EQUIPMENT & SUPPLIES:

A. Blanks
B. Cutting Heads
C. Magnetic Wire Recorders
D. Needles
E. Turntables & Machines

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A-E
See advertisement on page 134-A

(Continued on page 170A)

REK-O-KUT

Professional RECORDING EQUIPMENT

RK "16" DUAL SPEED 16" RECORDING ASSEMBLY

RKD—16 Dual Speed 16" Recording table, mounting base and motor . . .

This precision—constructed instrument, unsurpassed in quality and performance is operating in many of the leading broadcasting stations and educational institutions. Ruggedly constructed and painstakingly assembled for efficient and prolonged service.

●

"MASTER-PRO" RECORDING MECHANISM

You'll want this New 1945 "MASTER-PRO" . . . you'll like it for its design for its ruggedness, for its flexibility . . . and you'll like it for its quality of performance. NOT an old, redesigned 1941 model, but completely new. This "MASTER-PRO" is precisely machined, meticulously inspected, and rigidly tested to give you a perfect product, one you will be proud to own. Check its many new features . . . you will surely find it has no equal.

Features:

(a) Patented universal and support which allows the operator to instantaneously level the mechanism by raising or lowering the unit, thereby compensating for various thicknesses of recording blanks.

(b) An exclusive feature, a Universal cutter mount permits the operator to interchange most makes of magnetic or crystal cutters. A slide mechanism operating by means of one thumb screw, raises and lowers the cutter. This permits an instantaneous angular adjustment compensating for the various style lengths.

(c) Wider spaced and lowered bearings which pivot the cutterhead eliminates any possibility of horizontal twist in the cutterhead.

(d) A simple method of spiraling enables the operator to make a steep or shallow spiral which is unlimited as to length in one easy motion. This feature is available only on the "MASTER-PRO".

(e) Micrometer adjustment of tension spring for control of depth of cut, assures a positive and uniform groove without the danger of ruining the cut and the sapphire stylus due to sudden release of tension while making adjustments.

(f) A chip collector on the spindle avoids tight winding of the chip about the spindle. This prevents the chip from putting a drag on the cutting stylus which would ordinarily cause it to bend and spring back when the chip breaks, thereby ruining the recording. It also prevents the freezing of the cutter armature due to this excessive angular drag.

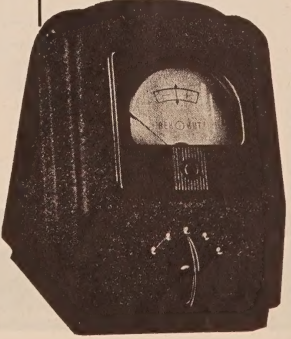
(g) The drive gears are totally enclosed to prevent fouling by loose chips.

(h) The tried and proven patented Bronze "half nut drive" first featured by REK-O-KUT seven years ago, is retained in the "MASTER-PRO". This drive is positive and will not cause a grouping if one or two threads are torn or chipped, either in the nut or on the lead screw. The nut and lead screw are readily removable to facilitate substitution of various pitches.

(i) The stainless steel lead screw turns on two hardened steel balls which require no lubrication and will not wear.

RECORDING ASSEMBLY EQUIPMENT CONSISTS OF

1. Lathe turned, 25 lb. cast iron turntable, dynamically balanced, with disappearing drive pin and rubber turntable pad.
2. Turntable fitted with one inch diameter hardened and polished steel shaft, with special oil grooves for force feed lubrication when operating. Rotates on a single ball bearing at the bottom of the turntable well.
3. Powered by a powerful constant speed motor.
4. Adjustable stops to regulate idler pressure against turntable.
5. 10 lb. machined mounting base of Cast Iron, with intergral lathe bored and lapped turntable bearing.
6. Single unit type construction insures positive and easy alignment of the REK-O-KUT overhead mechanism with the turntable.
7. Entire assembly can be permanently installed in 15 minutes.



VM-2 RECORDING LEVEL METER

Mounted in an unbreakable, cast aluminum case, styled for appearance as well as utility, the VM-2 RECORDING LEVEL METER takes recording out of the hands of the expert.

This beautiful instrument scientifically designed, as to angle and color, enables the artist to watch the volume of his recording while performing. The dial which is readable up to 25 feet is calibrated to permit recording with full groove utilization at 120 lines per inch of either speech or music with most makes of cutters.

The possibility of overcutting or distortion is reduced to a minimum. The VM-2 RECORDING LEVEL METER utilizes an entirely new principle of visual control at the point of recording. This assures a professional recording by the recording artist himself. No longer is it necessary for a second person to operate the controls at the amplifier in order to keep the recording at its proper volume. Recording exactly as he delivers, the artist is assured of a faithful reproduction of his own distinctive style.

The VM-2 RECORDING LEVEL METER is wired to operate from the output of an 8, 15, 200, or a 500 ohm amplifier.

●

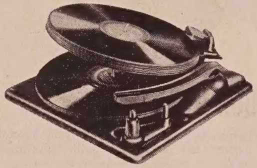
Write for illustrated literature
on these and other
REK-O-KUT items.

REK-O-KUT COMPANY

146 GRAND ST.
NEW YORK 13, N.Y.

EXPORT DIVISION · Morhan Export Co. · 458 Broadway · New York 13, N.Y. · CABLES: MORHANX

MODEL 56
WEBSTER
RECORD CHANGER



LESS RUMBLE

Rumble—a disturbing factor to record enjoyment—has been reduced to a new low in this post-war Webster Changer. Just one of many reasons for its preference by the public—and its selection by famous makers of radio phonograph combinations.

other important features

Built to last • Fast change cycle • Simple, fool-proof operation • Automatic shut-off • Feather light needle pressure • Longer life for records • • Reduced "wow" • Quiet running Webster 4 Pole motor–cushion mounted.

The choice of music lovers

WEBSTER CHICAGO
5610 Bloomingdale Avenue
CHICAGO 39, ILLINOIS
32 years of Continuous Successful Manufacturing

65. Recording Equipment & Supplies
(Continued from page 168A)

The Astatic Corp., P.O. Box 120, Conneaut, Ohio B
See advertisement on page 79-A

Audak Co., 500 Fifth Ave., New York 18, N.Y.
See advertisement on page 168-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif. A, B, E
See advertisement on page 124-A

Ellinwood Industries, 170 W. Slauson Ave., Los Angeles 3, Calif. A, B, D, E
See advertisement on page 160-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass. C
See advertisement on page 134-A

Frederick Hart & Co., Inc., 350 Madison Ave., New York 17, N.Y. Film Recorders
See advertisement on page 168-A

Peirce Wire Recorder Corp., 1328 Sherman Ave., Evanston, Ill. C
See advertisement on page 170-A

Presto Recording Corp., 242 W. 55th St., New York 19, N.Y. A, B, D, E
See advertisement on page 10-A, 11-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. B-E
See advertisement on page 19-A

Rek-O-Kut Co., 146 Grand St., New York 13, N.Y. B, C, E
See advertisement on page 169-A

Rowe Industries, Electronics Div., 3120 Monroe St., Toledo 6, Ohio C
See advertisement on page 150-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill. C
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Webster-Chicago Corp., 5610 Bloomingdale Ave., Chicago 39, Ill. C, E
See advertisement on page 170-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. B, C
See advertisement on page 42-A, 43-A

66. RECORDING SERVICES

67. RECTIFIERS:

- A. Metallic
- B. Meter Rectifiers
- C. Vacuum Tube. Also see Power Supplies

Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill. A-C
See advertisement on page 134-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. A, C
See advertisement on page 185-A

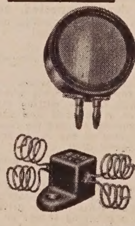
Amer. Television & Radio Co., 300 E. 4th St., St. Paul 1, Minn. A
See advertisement on page 184-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. C
See advertisement on page 178-A

Cambridge Thermionic Corp., 456 Concord Ave., Cambridge 38, Mass. A
See advertisement on page 21-A

Electrons, Inc., 129 Sussex Ave., Newark 4, N.J. C
See advertisement on page 167-A

SELENIUM CORPORATION OF AMERICA
Affiliate of VICKERS, Incorporated
1719 WEST PICO BOULEVARD • LOS ANGELES 15, CALIFORNIA
Export Division: Frazer & Hansen, 301 Clay Street, San Francisco 11, Calif.
In Canada: Canadian Line Materials, Ltd., Toronto 13, Canada

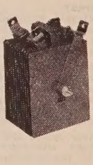


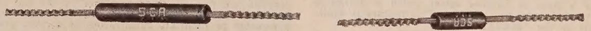
Manufacturers of a broad line of SELENIUM Power and Instrument Rectifiers, Photo-Electric Cells and allied scientific products

Engineered for Engineers

Check these SELENIUM RECTIFIER features:

- ✓ Permanent characteristics.
- ✓ Adaptability to all types of circuits and loads.
- ✓ Unlimited life—no moving parts.
- ✓ Immunity to atmospheric changes.
- ✓ High efficiency per unit weight.
- ✓ Hermetically sealed assemblies available.
- ✓ From 1 volt to 50,000 volts RMS.
- ✓ From 10 micro-amperes to 10,000 amperes.
- ✓ Economical—No maintenance cost.





PEIRCE WIRE RECORDER CORPORATION

Manufacturers—Design and Development Engineers
Manufacturers of

Magnetic Wire Recorders—Airborn Magnetic Wire Recorders

Recorder-Reproducer Magnetic Wire Recorders

Radio Tube Testers—Precision Type Cable Assemblies

1328 Sherman Ave. Davis 1328 Evanston, Ill.

67. *Rectifiers*

(Continued from page 170A)

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A-C
See advertisement on page 39-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y. C
See advertisement on pages 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Inductive Equipment Corp., Quarry Park, Gettysburg, Pa. A-C
See advertisement on page 58-A

Jennings Radio Mfg. Co., 1098 E. William St., San Jose 12, Calif. C
See advertisement on page 117-A

The Langevin Co., Inc., 37 W. 65th St., New York 23, N.Y. C
See advertisement on page 165-A

National Union Radio Corp., 57 State St., Newark 2, N.J. C
See advertisement on page 59-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. C
See advertisement on page 19-A

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y. A
See advertisement on page 104-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass. C
See advertisement on page 81-A

Raytheon Mfg. Co., Radio Receiving Tube Div., 445 Lake Shore Dr., Chicago 11, Ill. C
See advertisement on page 81-A

Selenium Corp. of America, 1719 W. Pico Blvd., Los Angeles 15, Calif. A
See advertisement on page 170-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. C
See advertisement on page 121-A

Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill. A, C
See advertisement on page 87-A

Sylvania Electric Products, Inc., Emporium, Pa. A-C
See advertisement on page 89-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A-C
See advertisement on page 3-A

Regulators, Voltage, see Voltage Regulators

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68. **RELAYS:**
- **A. Keying**
- **B. Power**
- **C. Stepping**
- **D. Telephone Types**
- **E. Time Delay**
- **F. Vacuum Enclosed**

Aircraft Radio Corp., Boonton, N.J. A, D
See advertisement on page 105-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A-C
See advertisement on page 134-A

Amperite Co., 561 Broadway, New York 12, N.Y. E, F
See advertisement on page 154-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y. D
See advertisement on page 148-A

(Continued on page 172A)

Consult Sigma
IF YOUR RELAY REQUIREMENTS ARE:
PRECISION • RUGGEDNESS • SENSITIVITY

★

TYPE 4F

TYPE 4F
This is the Series 4 relay with open frame construction. It is compact (1⅝" x 1⅜" x 1 5/32"), fast (2 - - 3 milliseconds with sufficient power), sensitive (.010 watts minimum).

★

TYPE 4A

TYPE 4R

TYPES 4A AND 4R
These are the basic Series 4 construction with enclosures. The 4A is 2⅛" diameter and 2⅛" high, the 4R ½" x 1½" x 2⅝". Both have a 5-pin plug in base. The 4A can be sealed (4AH).

★

TYPE 5F

TYPE 5F
This is the Series 5 relay with open frame construction. It is exceedingly sensitive (.0005 watts minimum), very rugged, precise in operation even under extremes of temperature and vibration.

★

TYPE 5R

TYPE 4 (or 5) RJLB2

TYPES 5R AND 4 (or 5) RJLB2
5R is the Series 5 construction in an enclosure (1½" x 1½" x 2¼") with a 5-pin plug in base. The RJLB2 is a hermetically sealed enclosure with two mounting bolts available for both the Series 4 and 5 relays.

TYPE 41F
The *new* Sigma Relay recommended for critical performance requirements at a low price in high volume applications. Features of other Sigma Relays not needed in these applications have been omitted.

Sigma . . . A recognized leader in the Sensitive relay field, offers YOU a quality product, priced right and engineered to meet your specifications.

Write today explaining your requirements.

SIGMA

Sigma Instruments, INC.
Sensitive RELAYS
70 CEYLON ST., BOSTON 21, MASS.

68. Relays

(Continued from page 171A)

C. P. Clare & Co., 612 N. Michigan Ave., Chicago 11, Ill. A, C-F
See advertisement on page 172-A

The R. W. Cramer Co., Inc., Centerbrook, Conn. E
See advertisement on page 136-A

Eitel-McCullough, Inc., 1123 San Mateo Ave., San Bruno, Calif. F
See advertisement on page 75-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. D
See advertisement on page 39-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y. F
See advertisement on page 48-A, 49-A

Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif. A, B, E
See advertisement on page 29-A

Sigma Instruments, Inc., 70 Ceylon St., Boston 21, Mass. A-E
See advertisement on page 171-A

Sylvania Electric Products, Inc., Emporium, Pa. F
See advertisement on page 89-A

U. S. Instrument Corp., 19 S. Harrison St., E. Orange, N.J.
See advertisement on page 174-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Ward Leonard Electric Co., 83 South St., Mt Vernon, N.Y. A, B, E
See advertisement on page 94-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. D
See advertisement on page 42-A, 43-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A, B, E
See advertisement on page 3-A

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69. REMOTE CONTROLLING EQUIPMENT

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.
See advertisement on page 178-A

Collins Radio Co., 855 35th St. S.E., Cedar Rapids, Iowa
See advertisement on page 53-A, 54-A, 55-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif.
See advertisement on page 126-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

Polarad Electronics Co., 135 Liberty St., New York 6, N.Y.
See advertisement on page 156-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on page 12-A, 130-A, 142-A, 176-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.
See advertisement on page 121-A

Stoddart Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif.
See advertisement on page 173-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo.
See advertisement on page 47-A

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70. RESISTORS:

A. Fixed
B. Precision
C. Vacuum Sealed
D. Variable
E. Wire Wound

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass. A, E
See advertisement on page 69-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A, B, E
See advertisement on page 134-A

Amperite Co., 561 Broadway, New York 12, N.Y. C
See advertisement on page 154-A

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio B U.H.F. Resistors, Coax. Terminals
See advertisement on page 151-A

Centralab, Div. Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 11, Wis. D, E
See advertisement on page 14-A, 15-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif. A, B, E
See advertisement on page 124-A

Corning Glass Works, Corning, N.Y. A, B
See advertisement on page 8-A, 9-A

The Daven Co., 191 Central Ave., Newark 4, N.J. B, C, E
See advertisement on page 32-A

Electrical Reactance Corp., 49 Elm St., Franklinville 3, N.Y. E
See advertisement on page 116-A

Erie Resistor Corp., 640 W. 12th St., Erie, Pa. A
See advertisement on page 83-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. A, B, E
See advertisement on page 51-A

International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa. A, B, C, D, E
See advertisement on page 93-A

Madison Elec. Prods. Corp., 78 Main St., Madison 3, N.J. B, E
See advertisement on page 120-A

Ohmite Mfg. Co., 4967 W. Flournoy St., Chicago 44, Ill. A-E
See advertisement on page 111-A

Sprague Electric Co., 189 Beaver St., North Adams, Mass. A, B, E
See advertisement on page 71-A

Stackpole Carbon Co., Tannery St., St. Mary's 3, Pa. A, D
See advertisement on page 61-A

Sylvania Electric Products, Inc., Emporium, Pa. C
See advertisement on page 89-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill. D, E
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Ward Leonard Electric Co., 83 South St., Mt. Vernon, N.Y. A, D, E
See advertisement on page 94-A

(Continued on page 174A)

There is a CLARE "Custom-Built" RELAY To Meet Every Radio Requirement

Radio engineers find that Clare "custom-building" permits a flexibility of design and construction that makes Clare Relays the ideal choice for radio applications.

Clare "custom-building" provides:

1 A wide range of contact ratings.

2 Choice of five different contact forms, or any combination of them.

3 Either flat or hemispherical contacts of rare metals or special alloys.

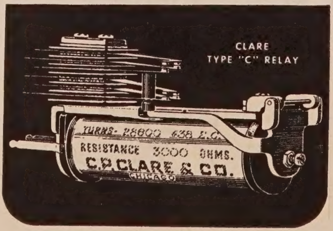
4 Coil windings to match the circuit and application.

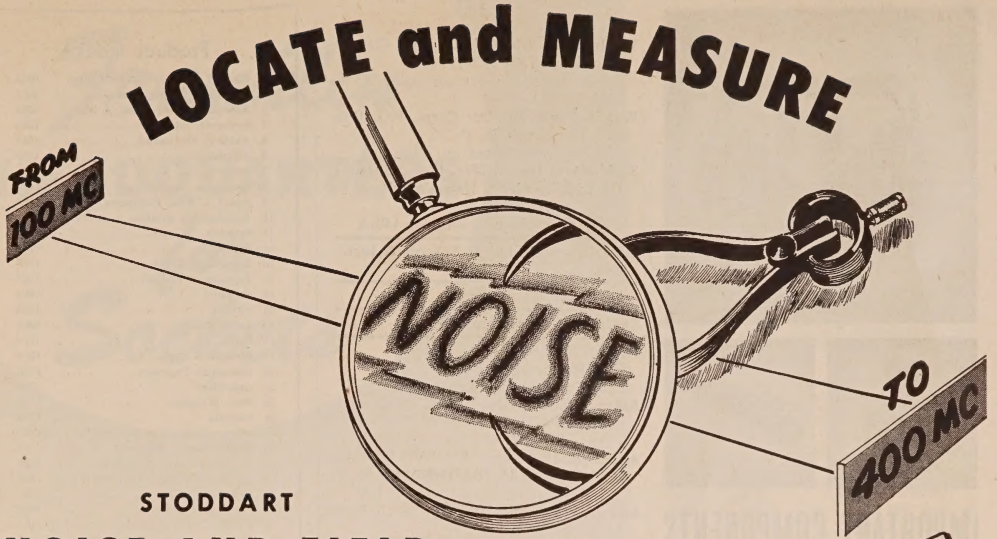
5 Desired contact closure sequence and contact pressures.

Thus Clare "Custom-Built" Relays offer the radio engineer . . . with the utmost economy . . . a relay most exactly suited to specific requirements. Send for the Clare catalog and data book today. Address C. P. Clare & Co., 4719 West Sunnyside Avenue, Chicago 30, Illinois. Sales engineers in principal cities. Cable address: CLARELAY.

CLARE *"Custom-Built"* RELAYS

"Custom-Built" Multiple Contact Relays for Electrical, Electronic and Industrial Use




LOCATE and MEASURE
FROM
100 MC
NOISE
TO
400 MC

STODDART

NOISE AND FIELD INTENSITY METER

Model NMA-4

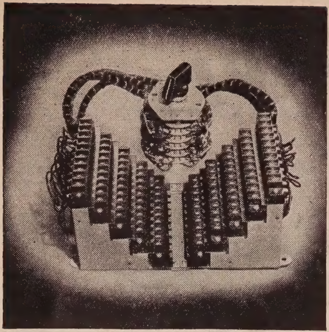
- 100 to 400 MC in single band.
- One Microvolt sensitivity.
- Direct reading in Microvolts.
- Measures conducted and radiated noise.
- Provision for External Recording Meter.
- Measures Field Strength of Transmitters in the U.H.F. Range.
- It assists in the production of noise-free products by manufacturers.
- It locates and analyzes existing noises which interfere with radio reception.
- Its stability and accuracy enable transmitter engineers to obtain dependable field strength patterns.

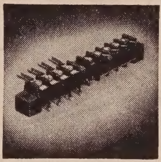
Write for further information and complete technical data.

Now available
FOR NON-MILITARY USE

STODDART AIRCRAFT RADIO CO.

6644 SANTA MONICA BLVD. • HOLLYWOOD 38, CALIFORNIA





IMPORTANT COMPONENTS FOR YOUR OWN PRODUCTION

THESE efficiently designed precision units are now at the disposal of peacetime manufacturers.

Products you see listed below are available in large production quantities.

☐ SOUND POWERED TELEPHONE INSTRUMENTS HANDSETS SINGLE UNITS HEADSETS

*

☐ SIGNAL STATIONS, MAGNETO-HOWLER TYPE

*

☐ PRECISION ROTARY SELECTOR SWITCHES

*

☐ TERMINAL BLOCKS, SINGLE AND MULTIPLE

*

Check your needs, and get in touch with us. We shall be happy to discuss your immediate or long-range requirements. Write, wire or telephone.

The pride we take in our award of the Army-Navy E is reflected in the very highest type of craftsmanship in our peacetime production.

UNITED STATES INSTRUMENT CORP.

19 SOUTH HARRISON STREET • EAST ORANGE, N. J.

70. *Resistors*

(Continued from page 172A)

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. B
See advertisement on page 42-A, 43-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. C
See advertisement on Page 3-A

S. S. White Dental Mfg. Co., Industrial Div., 10 E. 40th St., New York 16, N.Y. A
See advertisement on page 140-A

Schools, see Technical Schools & Institutes

Screws, see Hardware

Shafts, see Hardware

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71. SOCKETS:
- **A. Receiving Types**
- **B. Transmitting Types**

Alden Products Co., 117 N. Main St., Brockton 64D, Mass. A, B
See advertisement on page 175-A

Allied Radio Corp., 833 W. Jackson Blvd. Dept. 3-46, Chicago 7, Ill. A, B
See advertisement on page 134-A

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill. A, B
See advertisement on page 33-A

A. W. Franklin Mfg. Corp., 175 Varick St., New York 14, N.Y. A, B
See advertisement on page 109-A, 175-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y. A, B
See advertisement on page 65-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. B
See advertisement on page 19-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. B
See advertisement on page 3-A

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72. SOLDER:
- **A. Cored**
- **B. Plain**

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A, B
See advertisement on page 134-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y.
See advertisement on page 65-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. B
See advertisement on page 3-A

Speakers, see Loudspeakers

Springs, see Hardware

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73. SWITCHES:
- **A. Circuit Breaking**
- **B. Key**
- **C. Power**
- **D. Receiver Wave Band Changing**
- **E. Rotary**
- **F. Time Delay**
- **G. Transmitter Wave Band Changing**

Aircraft Radio Corp., Boonton, N.J. B, E
See advertisement on page 105-A

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3 Antenna Phasing Equip. & Accs. .. 106A
4 Antennas, all types 106A
5 Antenna Accessories 108A
6 Attenuators 110A
7 Batteries 110A
8 Blowers & Cooling Fans 112A
9 Books & Book Publishers 112A
10 Broadcasting Stations 112A
11 Cabinets 112A
12 Cables 114A
13 Capacitors; Fixed 116A
14 Capacitors; Variable 118A
15 Ceramics 118A
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17 Choke Coils 120A
18 Coils 122A
19 Connectors 123A
20 Consulting Engineers 124A
21 Converters 126A
22 Core Materials 128A
23 Crystals 128A
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25 Distributors & Jobbers 132A
26 Drafting Equip. & Supplies 134A
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37 Inductors 142A
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39 Jacks 146A
40 Keys 148A
41 Lacquers 148A
42 Loudspeakers & Headphones 148A
43 Mach'y & Tools for Radio Mfg. 148A
44 Magnets 150A
45 Metals 150A
46 Meters 150A
47 Microphones 152A
48 Monitoring Equipment 154A
49 Motor-Generators 154A
50 Motors, very small 154A
51 Moulded Products 156A
51A Optical Screens, Mirrors and Materials 156A
52 Oscillators 157A
53 Oscillographs & Accessories 157A
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55 Phonograph Pick-ups 160A
56 Pilot Lights & Assemblies 160A
57 Plastics 162A
58 Plugs 162A
59 Power Supplies 162A
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61 Racks 164A
62 Radar, Also see Aircraft Equip. .. 166A
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64 Record Changing Mechanisms 168A
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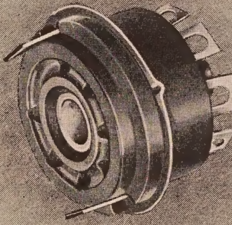
77 Transformers 179A
78 Transmitters 182A
79 Ultra-High Freq. Accs. & Equip. .. 182A
80 Vacuum Tubes 182A
81 Vibrators, Power Supply 184A
82 Voltage Regulators 185A
83 Waxes & Sealing Compounds 186A
84 Wire, Copper & Precious Metal .. 186A

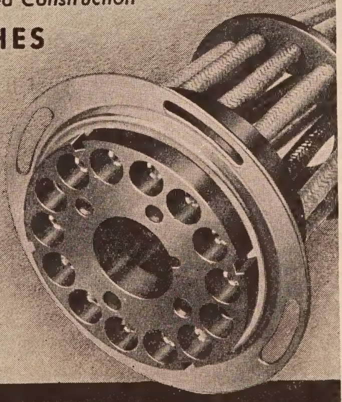
Franklin HEADQUARTERS *for Sockets*

OCTAL
ACORN
LOCKIN
MINIATURE
CRYSTAL HOLDER
BAYONET TUBE
CATHODE RAY
GLASS TUBE
PILOT LIGHT
DIHEPTAL
MAGNAL
DIAL LIGHT
BATTERY
Of Laminated, Bakelite or Ceramic Construction



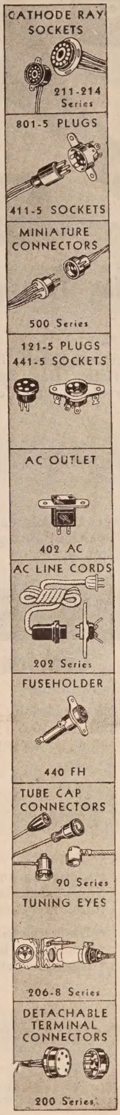
CONNECTION BLOCKS
TERMINAL BOARDS, PLUGS
Of Moulded or Laminated Construction

ROTARY SWITCHES
BANANA PINS
METAL AND
NONMETALLIC
STAMPINGS



A.W. FRANKLIN MANUFACTURING CORP.
175 VARICK STREET, NEW YORK, N. Y.
SOCKETS • TERMINAL STRIPS • PLUGS • SWITCHES • PLASTIC FABRICATION • METAL STAMPINGS • ASSEMBLIES

ALDEN RADIO COMPONENTS



211 AND 214 SERIES CATHODE RAY TUBE CONNECTOR WITH LEADS

Any requirements in a cathode ray tube connector with proper leads attached engineered as an assembly, high safety factors in all kinds of service. Super-long leakage paths, rounded, "coronaless" clips and individual pocket type insulation and strain relief.

801-5 SHIELDED PLUGS AND 411-5 METAL SOCKETS

Shielded plug and socket for automobile sets or for any other equipment where leads must be shielded and shield grounded to chassis. Shield is easy to put on and solder to plug. Supplied with or without shielded cable.

MINIATURE CABLE CONNECTORS 500 SERIES

Famous for connecting AC motors in combination sets and all kinds of "through-panel" work. Overall diameter only ¾". Save labor costs by having our special wire equipment put on leads to your particular needs. Underwriters approved.

121-5 MINIATURE PLUGS AND 441-5 SOCKETS

Compact plug and metal seal socket. Use when you want connector to come directly out of chassis. Leads to your specifications. "Pocket" type individual insulation on each lead and clip.

AC OUTLET 402AC

Smallest possible outlet that can be eyeletted or riveted to chassis like other components. Tabs designed for easy soldering.

AC LINE CORDS 202 SERIES

Detachable AC line and with socket, neat and compact. Socket eyelets or rivets in place like other components. Underwriters approved.

FUSEHOLDER 440FH

Here is a fuseholder that rivets or eyelets in place like the other components in your set. Cannot twist or turn, has spring to eject fuse if it breaks, and make contact at base of fuse and prevent rattle. Top contact slotted for easy removal of fuse ferrule when glass breaks. Tabs are special design for ease in attaching primary leads of ample size.

90 SERIES TUBE CAP CONNECTORS WITH LEADS

Any requirement in tube cap connectors supplied with leads of proper voltage handling characteristics. Many made special, hundreds of moldings, stampings and wire to draw on.

206-8 TUNING EYES WITH LEADS

Supplied with tailor-made leads. With or without escutcheon and bracket. Individual insulation and strain relief for each lead.

200 SERIES DETACHABLE TERMINAL CONNECTORS

Replaces terminal strips. Supplied with leads. Each lead has individual insulation and strain relief.

WIRE AND CABLE

Any kind of wire or cable laced, braided, woven or assembled with any of our components or those of other make. Many types of wire in stock and in process.

NEW ITEMS

Alden is a specialist in bringing through special electrical assemblies; new samples made promptly.

ELECTRICAL RECORDING INSTRUMENTS

Special instruments to record electrical impulses as **they occur** with all the minute variations of intensity and duration, free from the lag and inertia of present systems. "Electrographic" recorders we can supply, include a **complete** line of facsimile recorders, specially engineered recorders for high speed signal analysis, slow speed recorders for day by day events, multi-trace recorders for simultaneous recording of any phenomena that can be reduced to electrical impulses.

ALDEN PRODUCTS COMPANY
BROCKTON 64D, MASS.

Sherron Electronics

TEST EQUIPMENT

Production and Laboratory Vacuum Tube Test Equipment to inspect the following type tubes for all electrical characteristics.

Receiving-Transmitting and Power

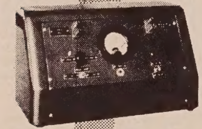
Electrical Shorts, Heater, Cathode Leakage, G.M., Static Characteristics, Gas, Emission, Plate Cut-off, Diode Emission, Grid Currents, Trans Conductance, Power Output, Amplification.

Cathode-Ray & Kinescopes

Voltage Breakdowns, Gas, Focusing, Light Output, Spot Size and Position, Beam Current, Line Width, Screen Quality and Persistency.

Either—full automatic, semi-automatic or manual operation designed to accuracy as required for application.

Cathode Ray Null Detector



is a stand-by and a "must" for all A.C. Bridge measurements—1000 cycle source is included. Unit has a grain of 80 db at an input voltage of 100 micro volts.

Coaxial Cables

Production and laboratory Test Equipment for the inspection of Coaxial Cables and other transmission lines for the following characteristics:

- Dielectric Strength
- Insulation Resistance
- Characteristic Impedance
- Capacitance
- Power Factor
- Corona

Condensers & Resistors

Sherron Electronics W2XDK

Production and Laboratory Test Equipment designed to meet the individual application with an accuracy as demanded by requirements.

Capacity
Resistance
Dielectric and Insulation Resistance and Breakdown
"Q" measurements

Automatic or manual, these units are designed to give accurate results.

SHERRON ELECTRONICS CO.

Division of Sherron Metallic Corp.
1201 Flushing Ave., Brooklyn 6, N.Y.

"Where the Ideal is the Standard, Sherron Units are Standard Equipment"

73. Switches

(Continued from page 174A)

Aireon Mfg. Corp. Funston & Fairfax Rds., Kansas City 15, Kan. A
See advertisement on page 4-A, 5-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A-E
See advertisement on page 134-A

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill. E
See advertisement on page 33-A

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. B
See advertisement on page 178-A

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio U.H.F. Coax. Switches
See advertisement on page 151-A

Centralab, Div. Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 11, Wis, D, G
See advertisement on page 14-A, 15-A

C. P. Clare & Co., 612 N. Michigan Ave., Chicago 11, Ill. B
See advertisement on page 172-A

The R. W. Cramer Co., Inc., Centerbrook, Conn. F
See advertisement on page 136-A

The Daven Co., 191 Central Ave., Newark 4, N.J. E
See advertisement on page 32-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. B
See advertisement on page 39-A

A. W. Franklin Mfg. Corp., 175 Varick St., New York 14, N.Y. A
See advertisement on page 109-A, 175-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. E
See advertisement on page 51-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y. G
See advertisement on page 65-A

Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif.
See advertisement on page 29-A

Ohmite Mfg. Co., 4967 W. Flournoy St., Chicago 44, Ill. E, G
See advertisement on page 111-A

Stackpole Carbon Co., Tannery St., St. Mary's 3, Pa. A
See advertisement on page 61-A

Sylvania Electric Products, Inc., Emporium, Pa. E
See advertisement on page 89-A

U. S. Instrument Corp., 19 S. Harrison St., E. Orange, N.J.
See advertisement on page 174-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill. B, E
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

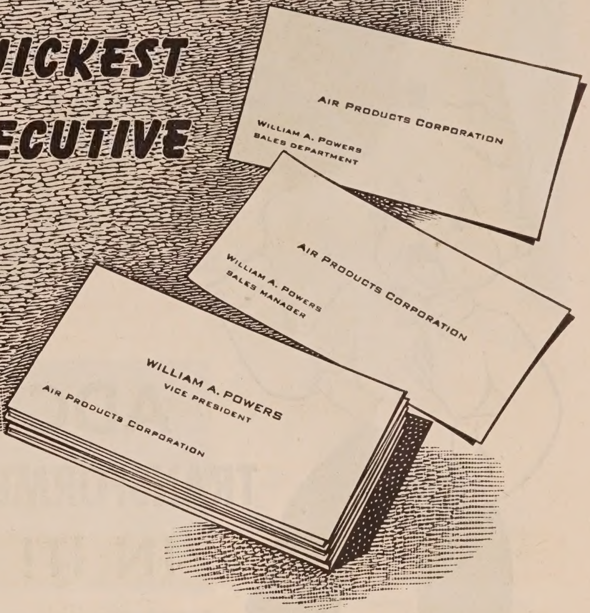
Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A, C, E
See advertisement on page 3-A

74. TECHNICAL SCHOOLS & INSTITUTES

Alexander Hamilton Institute, 71 W. 23rd St., Dept. 333, New York 10, N.Y.
See advertisement on page 177-A

(Continued on page 178A)

"WHAT'S THE QUICKEST WAY TO AN EXECUTIVE POSITION?"



Men have asked us that question for 36 years, and for 36 years the answer has been the same:

Master the underlying principles of business and industry. Study Production, Accounting, Finance and Marketing—not separately, but in relation to each other. Learn the fundamentals of not ONE but ALL of these four major business functions.

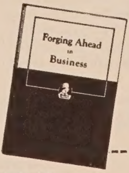
Men who direct the activities of others must have this kind of knowledge. It enables them to see beyond the specialized activities of one department. It broadens their vision, allows them to understand the problems of the business as a whole—the plant, sales force, treasurer—and to tell at a glance where the business stands by reading its financial reports.

More than 425,000 executive-minded men have obtained this essential training through the Alexander Hamilton Institute's Modern Business Course and Service. Thousands of them now head corporations or their own small businesses. The Institute's program is especially valuable because it is designed for busy men. It can be completed without interrupting normal business routine.

It is authoritative because of the many prominent contributors to this Course, among them: Thomas J. Watson, President, International Business Machines Corp.; Frederick W. Pickard, Vice President and Director, E. I. du Pont de Nemours & Co.; Clifton Slusser, Vice President, Goodyear Tire & Rubber Co. The Course is basic, thorough and scientific.

FORGING AHEAD IN BUSINESS . . . FREE!

The Institute's stimulating, descriptive booklet —"FORGING AHEAD IN BUSINESS"—explains how the Modern Business Course and Service is brought to subscribers in convenient, time-saving form . . . how it can give you immediate help in your present job while preparing you for opportunities in the future. A copy is yours for the asking. No cost or obligation involved. Simply fill out and mail the coupon below.



ALEXANDER HAMILTON INSTITUTE

ALEXANDER HAMILTON INSTITUTE
Dept. 333, 71 West 23rd St., New York 10, N. Y.
In Canada: 54 Wellington Street, West, Toronto 1, Ont.

Please mail me, without cost, a copy of the 64-page book—"FORGING AHEAD IN BUSINESS."

Name...
Firm Name...
Business Address...
Position...
Home Address..

Hey, Look Fellas!
ADC TRANSFORMERS IN IT!

ADC AUDIO COMPONENTS will help to guarantee that each and every one of YOUR amplifiers will meet the specifications, no matter how stiff they may be. You can bet that transformers and chokes from ADC will measure up to every exact requirement both in appearance and performance. Why? Well, Sir, (1) ADC's staff of designers have the "know how" of years of experience and research, (2) flexible, careful production facilities and (3) rigid inspections guarantee a product both you and ADC will be proud of.

If you'd rather, ADC can assemble your complete amplifier for you—tested and ready to put to use. You too, may find it more convenient and economical to use ADC's efficient production lines for your assembly job.

ADC will gladly swap a quotation for your specifications. Please address all communications to our representative nearest your location:

Burlingame Associates, Ltd.
11 Park Place
New York 7, New York

Maury Bettis & Company
Room 400, B.M.A. Building
Kansas City, Missouri

Walter P. Downs, Ltd.
702 Dominion Square
Montreal, P.Q., Canada

Seattle Radio Supply, Inc.
2117 Second Avenue
Seattle, Washington

B. G. Twyman & Associates
6406 North Fairfield Avenue
Chicago, Illinois

Cinema Engineering Company
1508 West Verdugo Avenue
Burbank, California

ADC

Audio Development Co.
2833 13th Ave. S., Minneapolis, Minn.
"Audio Develops the Finest"

74. *Technical Schools & Institutes*

(Continued from page 176A)

Radio-Television Inst., Inc., 480 Lexington Ave., New York 17, N.Y.
See advertisement on page 146-A

75. TESTING & MEASURING EQUIPMENT:

- A. Bridges
- B. Capacitor Testing Equipment
- C. Inductance & "Q" Testing Equipment
- D. Resistance Testing Equipment
- E. Vacuum Tube Testing Equipment
- F. Wave Form Analyzers & Distortion Testing Equipment

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass. A, B, C, D
See advertisement on page 69-A

Alden Products Co., 117 N. Main St., Brockton 64D, Mass.
See advertisement on page 175-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A-E
See advertisement on page 134-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. B-D
See advertisement on page 185-A

Andrew Co., 363 E. 75th St., Chicago 19, Ill.
See advertisement on page 110-A

Ballantine Labs., Inc., Boonton, N.J.
See advertisement on page 20-A

Alfred W. Barber Labs., 34-04 Francis Lewis Blvd., Flushing, N.Y.
See advertisement on page 152-A

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio U.H.F. Power Measurement, Slotted Lines, U.H.F. Line Termination and Artificial Antennas
See advertisement on page 151-A

Boonton Radio Corp., Boonton, N.J. A, C
See advertisement on page 153-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

Communication Measurements Labs., 120 Greenwich St., New York 6, N.Y. A
See advertisement on page 158-A

Communication Parts, 1101 N. Paulina St., Chicago 22, Ill. A
See advertisement on page 123-A

Cornell-Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N.J. A, B
See advertisement on page 35-A

The Daven Co., 191 Central Ave., Newark 4, N.J. A
See advertisement on page 32-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y. F
See advertisement on page 45-A

Tobe Deutschmann Corp., 863 Washington St., Canton, Mass. A, B
See advertisement on page 119-A

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J. F
See advertisement on page 67-A

Electronic Engineers, 611 E. Garfield Ave., Glendale 5, Calif. A
See advertisement on page 126-A

Electronic Measurements Co., Red Bank, N.J. C, E, F
See advertisement on page 164-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y. A, C, D
See advertisement on page 138-A

75. Testing and Measuring Equipment
(Continued from page 178A)

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass. E
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Hickok Elec. Inst. Co., 10587 DuPont Ave., Cleveland 8, Ohio A-E
See advertisement on page 56-A

Madison Elec. Prods. Corp., 78 Main St., Madison 3, N.J. A-E
See advertisement on page 120-A

Measurements Corp., 116 Monroe St., Boonton, N.J. A, B, D
See advertisement on page 159-A

New York Transformer Co., 62 William St., N.Y. 5, N.Y. C
See advertisement on page 179-A

Panoramic Radio Corp., 242 W. 55th St., New York 19, N.Y. F (Spectrum Analyzer)
See advertisement on page 17-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. A-F
See advertisement on page 19-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y.
See advertisement on page 12-A, 130-A, 142-A, 176-A

Solar Mfg. Corp., 285 Madison Ave., New York 17, N.Y. B
See advertisement on page 85-A

Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y.
See advertisement on page 37-A

Sylvania Electric Products, Inc., Emporium, Pa. A, B, E, F
See advertisement on page 89-A

United Transformer Corp., 150 Varick St., New York 13, N.Y. C
See advertisement on page 23-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. G
See advertisement on page 42-A, 43-A

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76. TRANSCRIPTION LIBRARIES

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77. TRANSFORMERS:

- A. Audio Frequency
- B. Hermetically Sealed Types
- C. High Fidelity Audio Types
- D. Power Components
- E. Pulse Generating Types
- F. Radio Frequency

The Acme Electric & Mfg. Co., 44 Water St., Cuba, N.Y. A-E
See advertisement on page 18-A

Aircraft Radio Corp., Boonton, N.J.
See advertisement on page 105-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A-C
See advertisement on page 134-A

Amer. Television & Radio Co., 300 E. 4th St., St. Paul 1, Minn. D
See advertisement on page 184-A

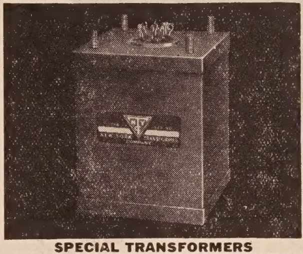
American Transformer Co., 178 Emmet St., Newark 5, N.J. A-D, F
See advertisement on page 57-A

(Continued on page 180A)

N·Y·T points the way...

IN THE DESIGN AND ENGINEERING OF TRANSFORMER, CHOKE AND TEST EQUIPMENT NEEDS!

RESEARCH
PRODUCTION
DESIGN
ENGINEERING


SPECIAL TRANSFORMERS

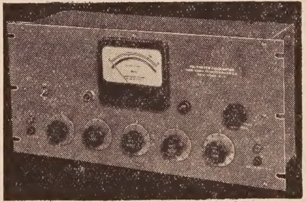
Backed by over 9,500 critical war time transformer, choke, and filter developments, N-Y-T engineers are now at liberty to bring to your transformer problems the vast experience gained in this development work. Now more than ever, leading electronic manufacturers are relying on N-Y-T for their special transformer choke and filter requirements.

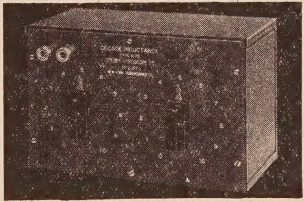
DECADE INDUCTANCE: All N-Y-T Decade Inductances operate to 25 db. Negligible change with reactive power to 10 VA. Q approximately 25 ± 5%. Range 50 to 20,000 cycles. Available in many inductance ranges.

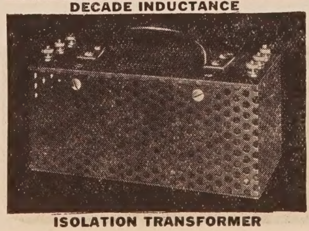
VOLTMETER CALIBRATOR: Supplies precise voltage for calibrating voltmeters. Only one standard meter is required to calibrate all meters from .01 to 1000 volts. Accuracy ½ of 1% or better up to 75 ma drain.

ISOLATION TRANSFORMER: A compact unit for laboratory, test and portable use. Capacity 250 VA, 115 volts, 1:1 ratio, 3 phase windings. Frequency range of 60 to 400 cycles permits wide application in laboratory and communication work.

NEW YORK TRANSFORMER COMPANY
62 WILLIAM ST.
NEW YORK 5, N.Y.


VOLTMETER CALIBRATOR


DECADE INDUCTANCE


ISOLATION TRANSFORMER

Complete Facilities-

- Engineering-Design & Development
- Laboratory & Model Shop
- Tool & Die Making
- Coil Winding
- Impregnating
- Blanking & Annealing of Core Steel
- Fabrication of all Mounting Parts
- Complete Assembly
- Compound Filling
- Inspection & Testing

devoted to One Primary Purpose

—the manufacture of transformers to fit the specialized requirements of the Electronic Industry

CHICAGO TRANSFORMER
DIVISION OF ESSEX WIRE CORPORATION
3501 WEST ADDISON STREET
CHICAGO, 18

CHICAGO TRANSFORMER CTC TRADE MARK REG.

ARMY NAVY E

77. Transformers

(Continued from page 179A)

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn. A-E
See advertisement on page 178-A

Cambridge Thermionic Corp., 456 Concord Ave., Cambridge 38, Mass. F
See advertisement on page 21-A

Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill. A-F
See advertisement on page 180-A

Collins Radio Co., 855 35th St. S.E. Cedar Rapids, Iowa A, C, D
See advertisement on page 53-A, 54-A, 55-A

Communication Parts, 1101 N. Paulina St., Chicago 22, Ill. B, F
See advertisement on page 123-A

Dinion Coil Co., Inc., Caledonia, N.Y. A-E
See advertisement on page 122-A

DX Radio Products, 1200 N. Claremont Ave., Chicago 22, Ill. A-C
See advertisement on page 27-A

Eastern Amplifier Corp., 794 E. 140th St., New York 54, N.Y. A-D
See advertisement on page 107-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A-D
See advertisement on page 39-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y. A-F
See advertisement on page 138-A

General Electric Co., Electronics Dept. Schenectady 5, N.Y.
See advertisement on page 48-A, 49-A

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass. A
See advertisement on page 51-A

Inductive Equipment Corp., Quarry Park, Gettysburg, Pa. A-F
See advertisement on page 58-A

Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N.Y. A-E
See advertisement on page 181-A

The Langevin Co., Inc., 37 W. 65th St., New York 23, N.Y. A-D
See advertisement on page 165-A

New York Transformer Co., 63 William St., New York 5, N.Y. A-E
See advertisement on page 179-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. A, B, C, F
See advertisement on page 19-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. A-E
See advertisement on page 121-A

Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill. A-D
See advertisement on page 87-A

Times Telephoto Equipment, Inc., 229 W. 43rd St., New York 18, N.Y. A
See advertisement on page 136-A

United Transformer Corp., 150 Varick St., New York 13, N.Y. A-E
See advertisement on page 23-A

Utah Radio Products Co., 820 Orleans St., Chicago 10, Ill. A-E
See advertisement on page 149-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A-E
See advertisement on page 3-A

(Continued on page 182A)

WE SPECIALIZE IN "Specials"

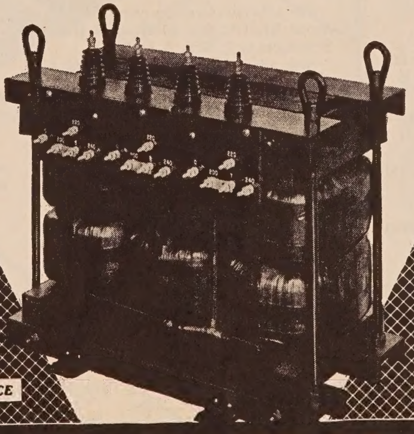
FOR NEARLY 20 YEARS, the Kenyon Transformer Company has done an outstanding job of satisfying the demand of large manufacturers for "special units" to fit exactly their most critical needs, with the same care that other manufacturers could provide items of their standard catalog lines.

THIS ACHIEVEMENT is a tribute to the skillful engineering ability of the Kenyon Pioneers who have maintained a leading place in the development of outstanding transformer equipment.

WE INVITE INQUIRIES from manufacturers of electronic and other types of equipment, and from industrial and commercial users of transformers.

KENYON PREDICTS that the small additional cost of "specials" will be more than offset by the superior product—streamlined to fit each manufacturer's requirement.

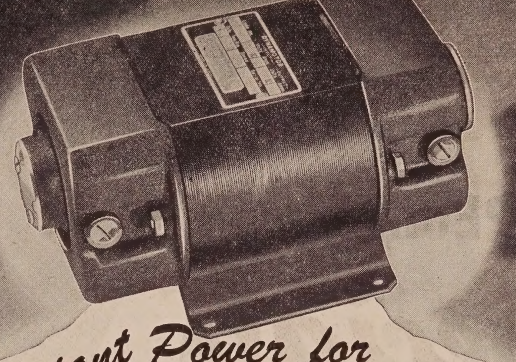
Inquiries invited — write for our new 1945 ILLUSTRATED CATALOG.



THE MARK OF EXCELLENCE

KENYON TRANSFORMER CO., Inc.

840 BARRY STREET
NEW YORK, U. S. A.



Instant Power for Your MOBILE TRANSMITTER

Only CARTER gives you instant power when you press your transmitter microphone switch. 600 volt plate power in less than 350 milliseconds ! ! Actual laboratory tests prove this unequalled starting performance, so important for instant communications. Remember, only the CARTER ORIGINAL GENEMOTOR gives you truly instant power.

Send today for latest free catalog of CARTER Rotary Products.

2638
N. MAPLEWOOD
Avenue

Cable
Genemotor

Carter Motor Co.
Chicago, Illinois

(Continued from page 180A)

78. TRANSMITTERS:

- A. Amplitude Modulation
- B. Communication
- C. Frequency Modulation
- D. Police & Emergency Equipment
- E. Television
- F. Ultra-High Frequency

Aircraft Radio Corp., Boonton, N.J. A, B, F
See advertisement on page 105-A

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kan. C, D, F
See advertisement on page 4-A, 5-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. B
See advertisement on page 134-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. A-D, F
See advertisement on page 185-A

American Transformer Co., 178 Emmet St., Newark, N.J.
See advertisement on page 57-A

Aviometer Corp., 370 W. 35th St., New York 1, N.Y. F
See advertisement on page 148-A

Collins Radio Co., 855 35th St. S.E., Cedar Rapids, Iowa A-D, F
See advertisement on page 53-A, 54-A, 55-A

Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill. A-D
See advertisement on page 154-A

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J.
See advertisement on page 67-A

Electronic Measurements Co., Red Bank, N.J. F
See advertisement on page 164-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. A-D, F
See advertisement on page 39-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass. B, F
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y. A-F
See advertisement on page 48-A, 49-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y. A, B, D, F
See advertisement on page 65-A

Polard Electronics Co., 135 Liberty St., New York 6, N.Y. A-F
See advertisement on page 156-A

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N.Y.
See advertisement on page 40-A, 41-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J. A, D, F
See advertisement on page 19-A

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y. A-D, F
See advertisement on page 104-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Sherron Electronics Co., Div. of Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N.Y. A, B, C, F
See advertisement on page 12-A, 130-A, 142-A, 176-A

Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y. B
See advertisement on page 37-A

Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill. B
See advertisement on page 87-A

Stoddart Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif. B
See advertisement on page 173-A

Telequip Radio Co., 1901-1907 S. Washtenaw Ave., Chicago 8, Ill. E
See advertisement on page 106-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. A-D, F
See advertisement on page 42, 43-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. A-D
See advertisement on page 3-A

Wilcox Electric Co., Inc., 14th & Chestnut, Kansas City 1, Mo. A-D, F
See advertisement on page 47-A

79. ULTRA-HIGH FREQUENCY ACCESSORY EQUIPMENT

- A. Antennas & Reflectors
- B. Measuring & Test Equipment
- C. Tuning Elements
- D. Wave Guides

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio B
See advertisement on page 151-A

Boonton Radio Corp., Boonton, N.J. B
See advertisement on page 153-A

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.
See advertisement on page 124-A

De Mornay-Budd, Inc., 475 Grand Concourse, New York 51, N.Y. F
See advertisement on page 45-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N.Y.
See advertisement on page 65-A

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N.Y. D
See advertisement on page 64-A

Radio Receptor Co., Inc., 251 W. 19th St., New York 11, N.Y. A
See advertisement on page 104-A

Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y.
See advertisement on page 37-A

Stoddart Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif. B, C
See advertisement on page 173-A

80. VACUUM TUBES:

- A. Cathode Ray
- B. Geiger Mueller
- C. Industrial Types
- D. Klystrons & Magnetrons
- E. Receiving Types
- F. Rectifiers
- G. Special Purpose & Phototubes
- H. Television Tubes
- I. Transmitting Types
- J. Voltage Regulator

Aireon Mfg. Corp., Funston & Fairfax Rds., Kansas City 15, Kan. I, F
See advertisement on page 4, 5-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A, C, E-J
See advertisement on page 134-A

(Continued on page 184A)

14,825 RADIO ENGINEERS

Who they are and where they work.

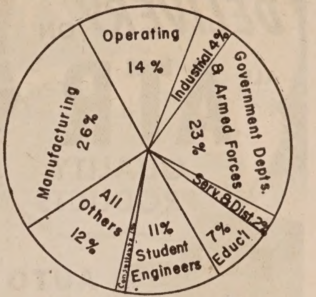
Just how can the advertising man define the radio engineer, identify and reach him?

It is true that a man's knowledge, training and work qualifies him as a radio-electronic engineer whether or not he calls himself one, or is so recognized. But most active radio engineers are members of the Institute of Radio Engineers. They need the many important services of the I.R.E., including:

The helpful and informative section meetings held in 32 engineering centers each month.

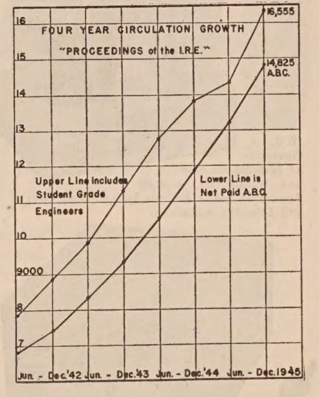
The monthly magazine "PROCEEDINGS of the I.R.E."

And so we find 16,555 radio engineers and engineers in training, members of the I.R.E. as a unit, engaged as follows:



You will readily see the importance of these men as a market. The radio-and-electronic industry is a technical one and only technicians are qualified buyers. Who really knows anything about buying a radio tube except a radio engineer?

During the past 4 years, membership in the I.R.E. has doubled. The chart below will show the growing importance in size alone of this easily reached group of engineers.



The post-war importance of radio engineers can hardly be over-estimated. Whatever course radio development takes, one thing is certain—"radio engineers" will be the men who guide these developments.

The advertising pages of the PROCEEDINGS of the I.R.E. will always be a direct method of reaching these engineers, who make future radio-and-electronic markets.

Who reads a Radio Engineering Journal?

The analysis of the December 31, 1945 A.B.C. Statement of the PROCEEDINGS of the I.R.E., gives the jobs of 15,025* subscribers, including 13,106 engineers, members of the I.R.E. A group of 1,730 college students (engineers in training) is included in the following tabulation of occupations.

Radio Manufacturing	4372—26%
Operation & Broadcasting	2361—14%
Industrial Operations	666— 4%
Armed Forces & Gov'ts	3930—23%
Distribution & Service	264— 2%
Educators & Colleges, Etc.	1219— 7%
Engineers in Training	1773—11%
Consulting Engineers	245— 1%
All others	1925—12%

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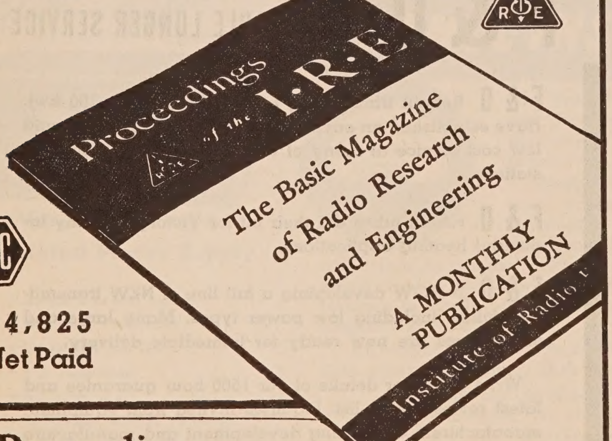
*200 higher than 6 month average.

In a technical industry, the engineer is key man to your sales. His experience determines buying, and his research controls future designs. The PROCEEDINGS of the I.R.E. is his monthly textbook, up-to-date. Its research articles outline the future of radio-and-electronics and its advertising equips the engineer with usable product knowledge.



14,825
Net Paid

Proceedings
of the I.R.E.
The Institute of Radio Engineers
Advertising Department
303 West 42nd St., New York 18, N. Y.

"To SELL the Radio Industry, TELL the Radio Engineers"

IMMEDIATE DELIVERY ON ALL ATR QUALITY PRODUCTS

AUTO RADIO Replacement VIBRATORS

Designed for Use in Standard Vibrator - Operated Auto Radio Receivers. Built with Precision Construction for Longer Lasting Life at *PRE-WAR PRICES!*

HEAVY DUTY VIBRATOR PACKS

For Inverting Low Voltage D.C. to High Voltage D.C. for Operation of Portable Receivers and Transmitters. Aircraft Apparatus, Public Address Systems, Amplifiers, and Scientific Apparatus.

STANDARD AND HEAVY DUTY INVERTERS

Specially Designed for Operating A.C. Radios, Television Sets, Amplifiers, Address Systems, and Radio Test Equipment from D.C. Voltages in Vehicles, Ships, Trains, Planes, and in D.C. Districts.

WRITE for LATEST ATR CATALOG — Just off the press!

AMERICAN TELEVISION & RADIO CO.
Quality Products Since 1931
ST. PAUL 1, MINN. U. S. A.

80. Vacuum Tubes
(Continued from page 182A)

Chatham Electronics, 475 Washington St., Newark 2, N.J. C, F
See advertisement on page 25-A

Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, N.J. A, C, H
See advertisement on page 67-A

Eitel-McCullough, Inc., 1123 San Mateo Ave., San Bruno, Calif. C, F, I
See advertisement on page 75-A

Electrons, Inc., 129 Sussex Ave., Newark 4, N.J. C, F
See advertisement on page 167-A

Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J. C, D, F, H, I
See advertisement on page 39-A

Freeland & Olschner Prods., Inc., 611 Baronne St., New Orleans 13, La. I
See advertisement on page 184-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y. A, C-J
See advertisement on page 48, 49-A

Jennings Radio Mfg. Co., 1098 E. William St., San Jose 12, Calif. C, I
See advertisement on page 117-A

National Union Radio Corp., 57 State St., Newark 2, N.J. A, C, E-I
See advertisement on page 59-A

Radio Corp. of America, RCA Tube Dept., Harrison, N.J. A-J
See advertisement on page 19-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass. A-J
See advertisement on page 81-A

Raytheon Mfg. Co., Radio Receiving Tube Div., 445 Lake Shore Dr., Chicago 11, Ill. A, C-J
See advertisement on page 81-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. G
See advertisement on page 121-A

Sperry Gyroscope Co., Inc., Great Neck, L.I., N.Y. D
See advertisement on page 37-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

Times Telephoto Equipment, Inc., 229 W. 43rd St., New York 18, N.Y. G
See advertisement on page 136-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Western Electric Co., Inc., 195 Broadway, New York 7, N.Y. D-G, I
See advertisement on page 42, 43-A

Westinghouse Elec. Corp., Lamp Div., MacArthur Plaza, Bloomfield, N.J. C, D, F, G, I
See advertisement on page 30, 31-A

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. C, E, F, I, J
See advertisement on page 3-A

Varnishes, see Lacquers

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81. VIBRATORS, POWER SUPPLY

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill.
See advertisement on page 134-A

Amer. Television & Radio Co., 300 E. 4th St., St. Paul 1, Minn.
See advertisement on page 184-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

F & O TRANSMITTING TUBES for RELIABLE LONGER SERVICE

F & O Rebuilt transmitting tubes (250 watts to 100 kw). Have established an enviable reputation for reliability and low cost service at many of the nation's large broadcast stations.

F & O rebuilt tubes did their bit for Victory in many industrial heating applications.

F & O is NOW developinig a full line of NEW transmitting tubes, including low power types. Many large and small types are now ready for immediate delivery.

Write today for details of our 1500 hour guarantee and latest revised price list. Inquiries invited from equipment manufacturers concerning development and manufacture of special tubes to fit your requirements.

FREELAND & OLSCHNER PRODUCTS, Inc.
NEW AND REBUILT TRANSMITTING TUBES
611 Baronne Street Phone Raymond 4756
NEW ORLEANS 13, LA.
Licensed by Radio Corporation of America

82. VOLTAGE REGULATORS:
- **A. Automatic**
- **B. Manually Controlled**

The Acme Electric & Mfg. Co., 44 Water St., Cuba, N.Y. B
See advertisement on page 18-A

Allied Radio Corp., 833 W. Jackson Blvd., Dept. 3-46, Chicago 7, Ill. A
See advertisement on page 134-A

American Radio Co., 611 E. Garfield Ave., Glendale 5, Calif. A, B
See advertisement on page 185-A

American Transformer Co., 178 Emmet St., Newark 5, N.J. A, B
See advertisement on page 57-A

Amperite Co., 561 Broadway, New York 12, N.Y. A
See advertisement on page 154-A

Burlington Instrument Co., 1800 Fourth St., Burlington, Iowa A
See advertisement on page 185-A

Communication Measurements Labs., 120 Greenwich St., New York 6, N.Y.
See advertisement on page 158-A

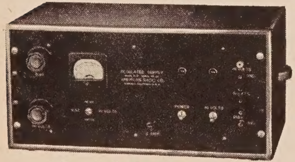
Federal Telephone & Radio Corp., 200 Mt. Pleasant Ave., Newark 4, N.J.
See advertisement on page 39-A

Freed Transformer Co., 72 Spring St., New York 12, N.Y. B
See advertisement on page 138-A

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass. A, B
See advertisement on page 134-A

General Electric Co., Electronics Dept., Schenectady 5, N.Y.
See advertisement on page 48, 49-A

Regulated Supply



Variable Voltage
Regulated Power Supply

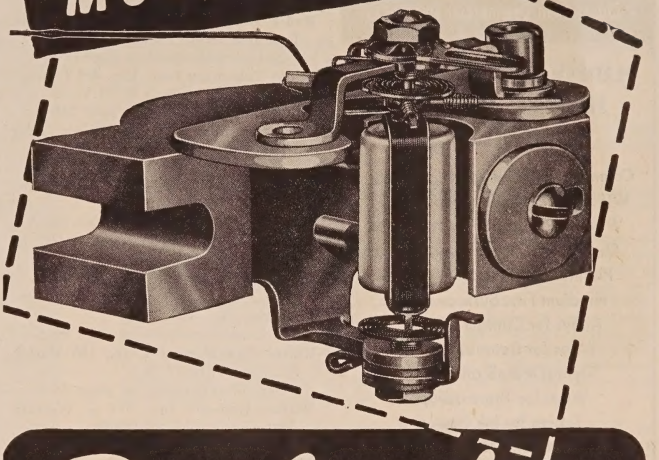
- Output 0 to 400 volts
- Bias 0 to —150 volts
- Up to 200 ma. load
- 1% regulation
- 6.3 volts a. c.
- Continuous voltage variation

Price
$195
F.O.B. Factory

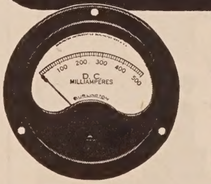
Supplied complete with rack panel and handsome cabinet.
Model P-11

AMERICAN RADIO CO.
611 E. Garfield Ave.
Glendale, California

PRECISION MOVEMENTS



Burlington
PANEL INSTRUMENTS



The heart of every Burlington Instrument — and the reason for its high degree of dependability — is the Burlington Precision Movement.

Design, material, and manufacturing processes are selected in such a manner that Burlington gives you a rugged instrument — which may be subjected to rough usage — and still retain its original calibration characteristics. All DC instruments employ Alnico magnets which are known to be more highly resistant to shock, heat, vibration, and stray fields than any other magnetic material.

All ranges AC & DC are available in 2½", 3½" and 4½" sizes, both square and round, flush mounting.

Engineering Service Furnished for Specialized Applications. No Obligation. Write Today for Further Information.

BURLINGTON INSTRUMENT CO.
1800 FOURTH STREET BURLINGTON, IOWA

•PANEL INSTRUMENTS • VOLTAGE REGULATORS • AUTOMATIC SYNCHRONIZERS • FREQUENCY REGULATORS

B

WIRE, RIBBON and other METAL PRODUCTS

- Smaller than Commercial Sizes
- Closer than Commercial Tolerances

PLATINUM · RHODIUM · IRIDIUM
PALLADIUM · RUTHENIUM
and ALLOYS

Commercial Purity and High Purity
WIRE, SHEET, FOIL, TUBING
Wire for Resistance Thermometers
Rhodium Electroplating Solutions
Platinum for Electronic Tubes
Rhodium First Surface Mirrors
Alloys for Contact Points
Wires for Detonator Fuses
Dental Metals and Alloys
Wires for Thermocouples
Tubing for Ink Devices
Wire for Pirani Gauges
Spark Plug Electrodes
Wollaston Wire
Duro Palladium

BASE METALS · RARE METALS
PRECIOUS METALS and ALLOYS

Galvanometer Suspension Strips
Platinum-Covered Grid Wire
Gold Covered Silver Wire
Gold Cyanide for Plating
Special Melts and Alloys
Gold Covered Grid Wire
Small Spring Ribbon
Electroplated Wires
Ribbon, All Metals
Molybdenum Ribbon
Tungsten Ribbon
Filament Ribbon
Filament Wire
Fuse Wire
Grid Wire

Write for List of Products and Data

SIGMUND COHN & CO.
SINCE 1901
44 GOLD STREET NEW YORK 7

82. Voltage Regulators
(Continued from page 184A)

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
See advertisement on page 51-A

Inductive Equipment Corp., Quarry Park, Gettysburg, Pa. A, B
See advertisement on page 58-A

Polarad Electronics Co., 135 Liberty St., New York 6, N.Y. A
See advertisement on page 156-A

Radio Corp. of America, Engineering Products Dept., Camden, N.J.
See advertisement on page 19-A

Radio-Television Inst., Inc., 480 Lexington Ave., New York 17, N.Y. A
See advertisement on page 146-A

Raytheon Mfg. Co., Receiving Tube Div., Waltham & Newton, Mass.
See advertisement on page 81-A

Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn. A, B
See advertisement on page 121-A

Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill.
See advertisement on page 87-A

Sylvania Electric Products, Inc., Emporium, Pa.
See advertisement on page 89-A

United Transformer Corp., 150 Varick St., New York 13, N.Y.
See advertisement on page 23-A

Walker-Jimieson Inc., 311 S. Western Ave., Chicago 12, Ill. Dealer
See advertisement on page 132-A

Ward Leonard Electric Co., 83 South St., Mt. Vernon, N.Y. A, B
See advertisement on page 94-A

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March 3-7
34th St. Armory & Hotel Commodore
New York
1947
I.R.E. National Convention
IRE
EXHIBITS
Radio
Engineering Show

Announcing—The 1947 National Convention of the Institute of Radio Engineers and Radio Engineering Show

PLACE: 34th Street Armory and Hotel Commodore

TIME: Monday, March 3 thru March 6

Exhibits: Available to about 150 radio and electronic firms. All units 10′ x 8′, rental \$250.00 (1/2 booth \$125.00) probably for 5 days or 40 hours, afternoon and evening. Write for full details and register your space requirements now, to:

William C. Copp, I.R.E. Exhibits Manager
303 West 42nd Street, New York 18, N.Y.
Circle 6-6357

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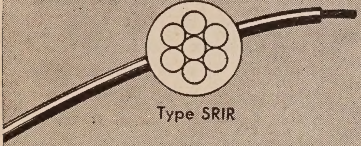
"Synkote"* THE WIRE FOR TODAY *and* TOMORROW!

ALL SYNKOTE WIRE IS THERMOPLASTIC INSULATED PERMITTING EXTREMELY SMALL OVERALL DIAMETER.

In addition to having unusually tough, practically age-proof insulation, all Synkote wire is designed to meet specific electronic needs.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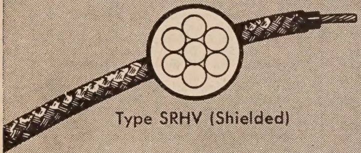
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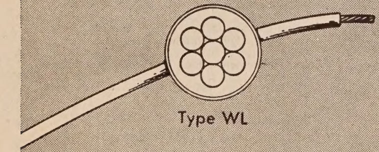
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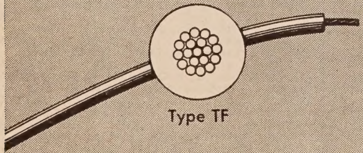
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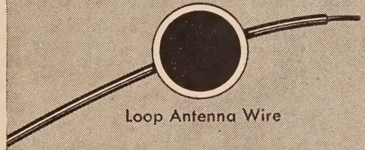
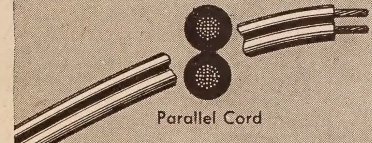
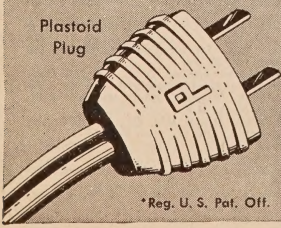

Loop Antenna Wire


Parallel Cord


Plastoid Plug

*Reg. U. S. Pat. Off.

"Synkote" RADIO HOOK-UP WIRES...

TYPE SRIR: Approved by the Army-Navy Electronics Standards Bureau (under Spec. JAN-C-76) for Radio Hook-up use where the voltage does not exceed 1,000 V. Sizes: 24 Solid to 6 Stranded.

TYPE SRHV: Designed for Radio Hook-up use where voltage does not exceed 2,500 V. Has the same Army-Navy approval as TYPE SRIR. Sizes: 24 Solid to 6 Stranded.

These two types of Radio Hook-up wire are recommended for communications and industrial electronic control applications. They have proved superior to push-back and rubber insulated types because the Synkote insulation is almost totally impervious to water, oils, acids, alkalies, sunlight, cold, and fungus growths. It is vermin-proof, unusually resistant to abrasion, flexing, and tearing, and will not support combustion. In addition, it has extremely high dielectric breakdown strength and low dielectric leakage. In tests performed by the Bureau of Ships, TYPE SRIR did not break down under 12,000 V., and TYPE SRHV under 18,000 V. Both types can be shielded to any specifications (see "SHIELDING" below), and both are available in two heat ranges: to 60°C. (140°F.) and to 80°C. (176°F.).

TYPE WL: Also approved by Army-Navy E. S. B. (under Spec. JAN-C-76) for voltages up to 600 V. Nylon jacketed, unusually resistant to abrasion, flexing, tearing, and heat, TYPE WL is available in sizes from 24 Solid to 6 Stranded, and can be shielded to any specifications. Ideally suited for lead-in wire where coils are subjected to high temperatures before installation, it is unaffected by temperatures up to 120°C. (248°F.).

TYPE TF: Approved by the Underwriters' Laboratories as Radio Hook-up wire under the category of Appliance Wiring Material. Sizes 26, 24, 22, and 20 (Solid and Stranded) are manufactured with either 1/64 or 2/64 insulation for 300 volt use. Sizes 18 and 16 (Solid and Stranded) have 2/64 insulation for 600 volt use. All sizes can be had for both 60°C. and 80°C. work—and can be shielded to any specifications.

Many other types of Hook-up Wire, to meet special requirements, can be manufactured on short notice—in practically any quantity desired. For complete information, consult our Engineering Department.

"Synkote" ANTENNA WIRE...

Specifically designed for use in the radio industry, this low voltage wire comes in Sizes 24 and 22 Solid, with an extremely thin wall of insulation (approx. 10 mils). It is used in tremendous quantities by some of the foremost manufacturers of small table-top radios as antennae leads.

"Synkote" TWO-CONDUCTOR PARALLEL CORD...

This wire has Underwriters' approval for lead-in purposes, plug or cord sets and patch cords. It has numerous applications in the communications, appliance, and electronics fields. Manufactured in 15 distinctive, lasting colors, these extremely tough, yet light and flexible cords will not collect dust and will remain shiny and clean.

PLASTOID PLUGS...

Molded in one solid piece, an integral part of the above Two-Conductor Cord—these plugs cannot be broken or detached. They are made of a tough, resilient, polyvinal chloride compound similar to the cord insulation.

SHIELDING: A braid of tinned or bare copper—to cut out interfering fields. Can be woven loose or tight, to any specified degree of coverage. Gauge of strands varies according to individual requirements.

PLASTOID Corporation

Sales and Executive Offices:
19 West 44th Street, New York 18, N. Y.
Factory: HAMBURG, N. J.

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